United Lincolnshire Hospitals NHS Trust

Director of Infection Prevention and Control Annual Report 2016-17

Contributors to this report are acknowledged as follows:

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Section 1

Executive summary

This Annual DIPC report summarises the work undertaken by the Infection Prevention Team during 2016-17. This report details the reductions in HCAI that have been made and the performance in ULHT against standards, targets and national initiatives during April 2016- March 2017.

Good infection prevention and control is essential to ensure our patients receive effective and safe care. This year has been challenging we have made headway in many areas.

This report clearly articulates the work of the Trust in reducing, controlling and preventing healthcare associated infections. It provides detail of how the Trust has worked over the past year.

The delivery of an effective Infection Prevention service is based on the annual programme, that identifies projects and initiatives which aim to continuously improve patient outcomes. Monitoring of progress is undertaken by the Trust Infection Prevention Committee, chaired by the Director of Infection Prevention and Control (DIPC).

Section 2

Introduction

The United Lincolnshire Hospitals NHS Trust (ULHT) continuously strives to improve infection prevention and control practice and has engaged with other organisations and partners to ensure there are robust Infection prevention plans, policies and capacity to reduce healthcare associated infections (HCAI) across the healthcare community of Lincolnshire. The Infection Prevention Team (IPT) continue to develop innovative ways of delivering important messages across to our staff, patients and visitors. The work programme is aligned with the Hygiene Code.

The Trust has annual threshold objectives set by NHS England for Clostridium difficile and MRSA bacteraemias. The objective for incidence of CDI in 2016-17 was achieved, with a total number of cases attributable to the Trust being 59 (threshold was 59 cases). The Trust's external zero threshold for MRSA bacteraemia was not achieved and the Trust reported 2 cases. Post infection reviews were undertaken and in accordance with NHS England requirements a serious incident report was submitted, the outcome is documented within this report. The Trust has experienced a number of outbreaks in 2016-17 which are detailed within this report.

2016-17 has delivered a number of improvements in line with the identified work programme. A number of the objectives have been continued into the current financial year, including: The IPT will continue to monitor practice by being visible in clinical areas and auditing practice. Clostridium difficile rates remain challenging and work continues to keep numbers below the set threshold. Further educational sessions will also be implemented to keep staff updated and proactive as regards to infection prevention practices. It is the intention to build upon this work in 2017-18, with the ultimate aim of protecting the patients who access healthcare at ULHT from avoidable healthcare associated infections where possible.

Section 3

Infection Prevention service

The Infection Prevention covers the Trusts four main hospitals working in conjunction with partners and regulators.

1. Introduction

The Trust Board recognises their collective responsibility for minimising the risks of infection and has agreed the general mechanisms by which it prevents and controls these risks. The Infection Prevention Annual Report, the Annual Infection Prevention Programme, together with the monthly and quarterly Infection Prevention Reports and committees are the governance processes which support the Board of Directors in assuring itself that prevention and control of infection risks are being managed effectively and that the Trust remains registered with the Care Quality Commission (CQC) without conditions.

The importance of maintaining high standards of infection prevention as well as cleanliness is a matter of national concern. The Health and Social Care Act 2008 (2015) clearly identifies that organisations must ensure they have satisfactory and robust arrangements to manage all areas related to infection prevention and control.

The Health and Social Care Act 2008 (2015): *Code of practice for the prevention and control of healthcare associated infections (Hygiene Code)* details 10 compliance criteria to which the Trust must adhere to in relation to preventing and controlling the risk of avoidable healthcare associated infections (HCAIs).

United Lincolnshire Hospitals NHS Trust is committed to reducing and managing risk, ensuring effective and safe practice. The Trust recognises that it has a duty of care to protect patients, staff, contractors and visitors from avoidable infection and support the need for effective systematic arrangements for surveillance, prevention and control. The Trust is committed to reducing the incidence of avoidable HCAIs and more importantly, maintaining that reduction.

All Trusts have to register with the Care Quality Commission (CQC); this body has the right to inspect the Trust compliance with the 'Health and Social Care Act, Code of Practice', which is a requirement for NHS Provider Compliance Assessment Outcome 8 (Regulation 12) (Cleanliness and Infection Control).

Under the Code of Practice, the Trust must ensure that:

- So far as reasonably practicable, patients, staff and other persons are protected against risks of acquiring HCAI through the provision of appropriate care, in suitable facilities, consistent with good clinical practice
- Patients presenting with an infection or who acquire an infection during treatment are identified promptly and managed according to good clinical practice for the purpose of treatment and to reduce the risk of transmission

The Trust is expected to have systems in place sufficiently to apply evidence-based protocols and comply with the relevant provisions of the Code to minimise the risk of avoidable HCAI to patients, staff and visitors. The systems for the prevention and control of HCAI are expected to address:

- Management arrangements to include access to accredited microbiology services
- Clinical leadership
- Application of evidence based protocols and practices for both patients and staff
- The design and maintenance of the environment and medical devices
- Education, information and communication

All NHS organisations must be able to demonstrate that they are compliant with the Code.

Table 1: Compliance criteria for the Code of Practice

Criterion	Defined
Criterion 1:	Systems to manage and monitor the prevention and control of infection. These systems use risk assessments and consider how susceptible service users are and any risks that their environment and other users may pose to them
Criterion 2:	Provide and maintain a clean and appropriate environment in managed premises that facilitates the prevention and control of infections
Criterion 3:	Provide suitable and accurate information on infections to service users and their visitors
Criterion 4:	Provide suitable accurate information on infections to any person concerned with providing further support or nursing/medical care in a timely fashion
Criterion 5:	Ensure that people who have or develop an infection are identified promptly and receive the appropriate treatment and care to reduce the risk of passing on the infection to other people
Criterion 6:	Ensure that all staff and those employed to provide care in all settings are fully involved in the process of preventing and controlling infection
Criterion 7:	Provide or secure adequate isolation facilities
Criterion 8:	Secure adequate access to laboratory support as appropriate
Criterion 9:	Have and adhere to policies, designed for the individual's care and provider organisations, that will help to prevent and control infections
Criterion 10:	Ensure, so far as is reasonably practicable, that care workers are free of and are protected from exposure to infections that can be caught at work and that all staff are suitably educated in the prevention and control of infection associated with the provision of health and social care

The Trust is unable to declare compliance against Criterion 2 of the code due to failure to achieve

the required national specification standard for environmental cleaning scores.

- Monthly Trust wide Infection Prevention Committee meetings- chaired by DIPC or Deputy DIPC
- Monthly Infection Prevention Team Operational meetings - chaired by Deputy DIPC or Lead Infection Prevention Nurse
- Monthly Site Infection Prevention meetings - chaired by Site IPC Lead (Head of Nursing)
- Weekly Infection Prevention Team meetings - chaired by Lead Infection Prevention Nurse
- Monthly upward reports to Quality Governance Committee

2. Description of Infection Prevention and Control arrangements

The Chief Executive has overall responsibility for the control of infection within the Trust. Michelle Rhodes the Director of Nursing is the Trust Director of Infection Prevention and Control (DIPC). The Infection Prevention Team are managed directly by the Deputy DIPC/Deputy Chief Nurse

2.1 Infection Prevention and Control Team

During 2016-17 the Infection Prevention Team (IPT) went through significant changes which presented a number of challenges for the team including; changes to the leadership of the Infection Prevention Team, changes to Infection Prevention Team and roles, significant sickness which resulted in interruptions to the work programme.

The agreed Infection Prevention Team structure at the end of 2016/17 was

- X1 WTE Lead Nurse Patient Safety and Infection Control
- X1 WTE Lead Infection Prevention Nurse
- X1 WTE Band 7 Infection Prevention Nurse
- X3 WTE Band 6 Infection Prevention Nurses
- X3 WTE Infection Prevention Assistants

The operational delivery of the Infection Prevention service is carried out by the Trustwide Infection Prevention Team. The annual work programme identifies the initiatives and projects that the team aspire to achieve within the financial year, aligned with the 10 compliance criteria of the Hygiene code. The Annual programme 2016-17 also included the core operational business which the team deliver on a daily basis, listed as follows:

- Providing advice on all aspects of Infection prevention, and control for clinical and supportive staff
- Providing advice and support on decontamination of medical and nursing equipment
- Providing advice and support to Directorate of Estates and team in relation to the decontamination of the

environment, maintenance of the building and in development of structural and innovation protects

- Working with staff involved in purchasing and planning to ensure infection prevention, and control issues are given a high priority in their activities
- Actively involved in managing the risk of infection to both patients and staff
- Identifying risks of infection and advising of interventions likely to minimise or eliminate those risks
- Actively involved in managing the risk of infection both to patients and staff
- Identifying risks of infection and advising of interventions likely to minimise or eliminate those risks
- Supporting the states team with advice relating to capital schemes
- Management of outbreaks of infections
- Conducting a programme of audit
- Reviewing and developing policies, guidelines, procedures and protocols to ensure care is evidence based and high quality
- Interpreting and implementing national guidance at local level
- Involvement with refurbishment, new building and equipment projects
- Delivery of trust wide induction training and mandatory core learning
- Advice and information to patients and carers

It has been recognised that progress against some of the actions in the 2016-17 annual programme remain uncompleted and these have been continued into the 2017/18 work programme.

2.2 Infection Prevention Link practitioners:

Infection Prevention Link's (IPL's) are registered nurses or healthcare support staff and multi-disciplinary team (MDT) members. All have an interest in infection prevention and work as a link between the infection prevention specialist service and their clinical area. Many areas have chosen to have more than one staff member sharing the role and they are nominated by the senior nurse or professional within the clinical area. The IPL's come from a range of different clinical disciplines, and are fundamental to successfully implementing and embedding ownership at ward or department level. They play a key role in informing, educating and supporting their colleagues in the clinical area. They also undertake frequent audits of key aspects of clinical practice.

During 2016-17 IPL's study days were held on a quarterly basis for the trust IPL's, rotating the venue between hospital sites. These days provide focussed education, networking with colleagues and keep the IPL's updated with relevant issues internally, local and nationally. They also provide a forum for exchanging ideas, sharing best practice and for discussion around key issues.

Educational sessions were delivered on the following:

- Norovirus
- Clostridium difficile
- Sharps management
- Hand hygiene
- MRSA
- TB
- Streptococcus A
- Waste management
- Saving lives High Impact Interventions
- CPE

Role/responsibilities of the IPL's:

- Act as a role model and resource in relation to IP and promote best practice
- Attend quarterly meetings and feedback to clinical area/team
- Being visible in the workplace, wearing a badge to identify themselves as the link professional
- Being accessible to all staff, MDT members, patients, staff and visitors
- Challenge poor practices and support staff in reviewing and changing these behaviour patterns
- Compile and keep an up to date resource file
- Assist with undertaking of audits, education and training, outbreaks, RCA's and keep information boards up to date
- Undertake, as a minimum, one hand-hygiene session for their area with the aid of the glow box each year
- Seek advice and guidance from the IP team when presented with new or complex situations
- Promote the use of appropriate documentation
- Assist and ensure that patients are isolated appropriately

2.3 Infection Prevention Committee

The Infection Prevention and Control Committee (IPCC) meet every month and has corporate responsibility for all infection prevention issues and monitoring the progress of the annual infection prevention programme.

The Committee has the following sub-committees, which each provide regular reports to the committee meetings:

- Trust Decontamination Committee
- Trust Water Safety Group
- Antimicrobial Stewardship Strategy Group
- Individual Site Infection Prevention meetings
- IP Operational meeting

The IPC receives surveillance reports on HCAI's, HCAI associated deaths, relevant RCA and PIR investigations, antimicrobial pharmacist reports, results of the antibiotics audits, reports from the site IP meeting chairs.

2.4 Reports to the Trust Board

At Trust Board the DIPC provides a performance report which includes the most recent infection prevention and control performance data, trends and exception reports of issues or risks that the board need to be aware of.

Monthly upward reports are provided to Quality Governance Committee also.

Section 4

Audit and Surveillance

Audit and Surveillance is fundamental to an effective infection prevention service.

Audit programme

Healthcare workers compliance with infection prevention practices and principles is vital in preventing the spread of infection. Audit enables a clear understanding of the standards in place and the level of adherence to policies and procedures. As such, audit is paramount to clinical improvement within infection prevention and the reduction of HCAIs.

The Hygiene Code requires the Trust to have in place a programme of audit to ensure that key policies and practices are being implemented appropriately. The IPL's, Ward and Department Leaders ensure that infection prevention audits are undertaken within their clinical area as per the IPT programme of work. These programmes are not an exhaustive list of the audits undertaken, and many additional audits have been conducted as part of an event or Trust activities.

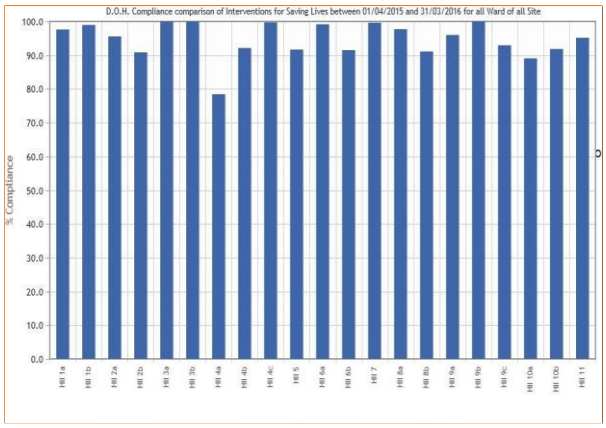
1. Saving Lives – High Impact Interventions

The Department of Health (DH 2006/2009) published High Impact Interventions (HII), which are evidence based and are related to key clinical procedures or care processes where it is possible to reduce the risk of infection if these interventions are performed appropriately. They are used as a tool for improvement to help address particular practice or care process issues.

Clinical areas have inputted their observations into the North 51 digital Infection Prevention Audit System, where applicable. There are several criteria within the tool which were not applicable to the Trust and clinical care delivery i.e. renal unit and central venous catheter (CVC) for clinical areas that do not provide care for patients with a CVC insitu.

It is important that the Trust monitors compliance with Saving Lives. If it is not possible to correct the technical issue within the software that is in use, the Trust should consider developing their own internal system with support from Information Computer Technology (ICT).

Graph 1 Department of Health compliance comparison of interventions for Saving Lives between April 2016 and March 2017 for all clinical areas from all Hospital sites. There is not full compliance in all clinical areas, however in 2017/18 reminders are being sent out to clinical areas and accountability letters to those areas not completing the audits.



2. Compliance with safe management of sharps

Although rare, injuries from sharps contaminated with an infected patient's blood can transmit more than 20 diseases including Hepatitis B, Hepatitis C and Human Immunodeficiency virus. As with many infection prevention policies, the assessment and management of the risks associated with the use of sharps is paramount and safe systems of work and engineering controls are in place to minimise any identified risks. When the use of sharps is essential, particular care is required in the handling and disposal of the sharps and wherever it is practical to do so safer sharps devices must be used. Two external sharp management audits were undertaken by Daniels Healthcare during 2016-17, to ensure that the Trust was managing sharps in accordance with HSE guidance for sharps management (HSE 2012). In each clinical area, the Nurse in Charge was provided with immediate feedback of the audit findings at the time of the audit, if this was not possible, a follow up call or email was undertaken with the next 48 hours. Additional to the audit process, during the audit the auditor endeavoured to:

a) Raise sharps awareness
b) Assess practice
c) Discuss problems
d) Advise on compliance to current legislation

Nine elements were reviewed during the audit, including the use of the temporary closure mechanisms, that sharp containers were not over filled and that sharps were disposed of at the point of care.

February 2017: Sixty six (66) clinical areas across the Trust were audited with a total of eight hundred and twenty (820) sharp containers inspected.

Findings included: two sharp containers with protruding sharps, these were not necessarily overfilled but had protruding sharps from them. Twenty one sharps containers that were not properly assembled, these were immediately assembled properly and staff were informed that sharps containers that were not assembled properly could lead to the lids coming off if

dropped or during transportation. One sharps container that was more than three quarters full, staff were reminded of the requirement to only fill to the fill line.

Six sharps containers had the wrong lid on the wrong base. Staff were reminded to check the colour of the lid and label.

Seven sharps containers were sited on the floor or at an unsuitable height or place, staff were advised to have them bracketed if possible or have them removed from public areas.

Some areas required wall or trolley brackets and this was discussed with the staff.

Forty eight sharps containers were unlabelled. All staff were informed that the label on the sharps bin must be completed at assembly and closure.

Fifty six sharps containers had significant inappropriate non sharp contents. Staff were advised not to put packaging or non-sharp items into sharps containers.

Forty sharps containers did not have the temporary closure mechanism in place when the container was left unattended or during movement.

Small sharps containers and trays were available to take to the bedside.

In response to these findings, Daniels Healthcare in conjunction with the IPT have undertaken training in the following areas:

- Training in the assembly of sharps containers
- Train staff not to overfill sharps containers
- Train staff to match lid and label correctly
- Keep sharps containers off the floor
- Train staff to fill in label following assembly
- Train staff not to put non sharps in sharps containers
- Train staff to put the temporary closure in place when unattended or when moved

Safe sharps audits are now conducted by Daniels Healthcare six-monthly and in addition audited monthly by ward and department areas.

3. Environmental and Clinical Audits

Environmental and Clinical audit is an important part of monitoring and evaluating compliance with good infection prevention practices. They are paramount to environmental and clinical improvement within infection prevention and the reduction of HCAI's. These audits are a cyclical process involving impromptu observation audits with rapid feedback and appropriate action in response to the results.

These are undertaken by a short review in the clinical area, preferably with a member of staff from the ward, based on the IPS tool, with a short summary report issued within three days of the review. Any deficits were reviewed on a follow up clinical visit. This enables the IPT to visit more

clinical areas in a week, highlight several issues that were common across several clinical areas, as well as any other issues.

Table 1: Shows the audits undertaken at Lincoln County Hospital.

Ward	Number of visits
Burton Ward	2
Ashby Ward	2
Clayton Ward	2
Carlton Coleby	2
ICU	2
Stroke Ward	2
Dixon Ward	2
Digby Ward	1
Hatton Ward	2
Lancaster Ward	3
Nettleham Ward	1
CSSU	2
Shuttleworth Ward	3
Waddington unit	2
Safari Day Unit	1
SCBU	1
MEAU	1
Navenby Ward	3
Johnson Ward	2
UIS	1
A&E	1
Neustadt-Welton	1
Ingham suite	1
Greetwell Ward	1

Table 2: Shows the audits undertaken at Grantham and District Hospital.

Ward	Number of visits
A&E	1
Theatre	1
Ward 2	2
Ward 1	1
EAU	1
AEC	1

Table 3: Shows the audits undertaken at Pilgrim Hospital Boston.

Ward	Number of visits
The Bostonian	2
3A	1
3B	1
5B	1
6A	1
6B	2
7A	1
7B	1
8A	2
9A	2
Admission Unit	1
Ambulatory Care	1
CHW	1
NNU	1

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Table 4: Provides a résumé of the common themes identified on the environmental and clinical audits.

Facilities	Damage to walls, door frames and floors
	Floors stained
	Work surfaces damaged
	Waste storage rooms not locked
	Waste segregation not compliant with general waste segregation
	Housekeepers cupboard small for the amount of equipment stored
	Hand wash sink/taps require descaling
	Caps on taps missing
	No storage space on wards
Clinical	IV lines not dated
	Using disposable B/P cuffs routinely
	No reason specified why a urinary catheter remains insitu and tubing touching the floor
	Inappropriate use of PPE
	VIP scores not recorded twice daily
General and environmental	Isolation room doors left open
	Alcohol hand rub not available at every patient bed space
	High and low levels of dust
	Dirty raised toilet seats
	Sharps bins – no temporary closure mechanism in place when not in use
	Inappropriate use of green is clean stickers
	Linen trolleys left open
	Dusty computer screens/PACS machines
	Missed opportunities for hand washing
	Inappropriate use of PPE
	Equipment labelled as clean, but still dirty/in use
	Alcohol hand rub containers dirty at entrance to wards
	Cluttered work tops
	Dirty commodes, but labelled as clean

In light of the findings from these audits, this continues to be a major focus for the IPT in 2017/18 and each member of the team will have areas of responsibility in order to improve compliance.

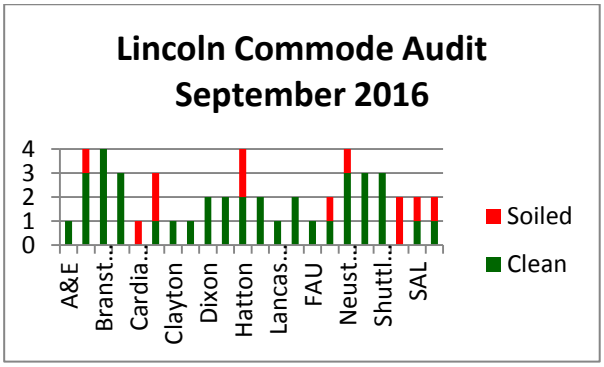
4. Commode audit

Commodes are in use constantly and their surfaces are constantly being handled, which provides an opportunity for many pathogens present to be transferred to not only other surfaces but also more importantly to our patients. It is important that all parts including underneath is visibly clean with no blood and body substances, dust, dirt, debris or spillage and that there is no damage to the commode. Damage prevents the equipment from being thoroughly cleaned and decontaminated.

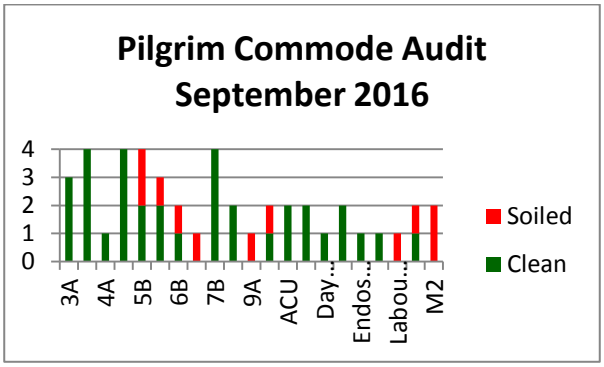
An external audit was conducted across the Trust by Clinell® during September 2016. In each clinical area, the Nurse in Charge on the day of the audit was provided with immediate feedback of the audit findings. If this was not possible a follow up call or email was done. Where possible during the audit the auditor endeavoured to:

a) Raise commode cleaning awareness
b) Discuss cleaning methods
c) Discuss cleaning products

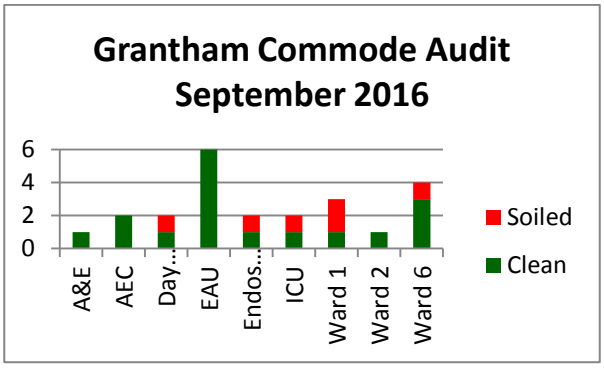
Graph 3: A total of fifty two commodes were reviewed at Lincoln County Hospital, twelve of these were soiled. This graph highlights which areas had soiled commodes and how many.



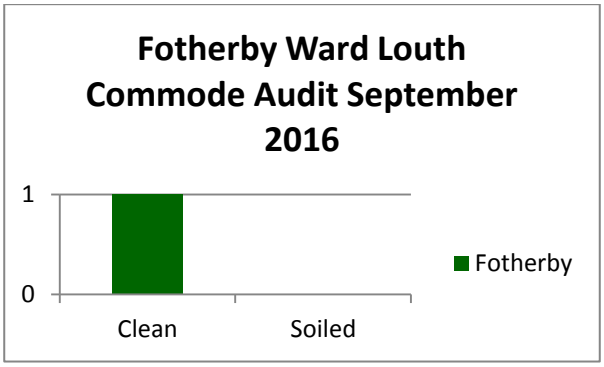
Graph 4: A total of forty-five commodes were reviewed at Pilgrim Hospital Boston, eleven of these were soiled.



Graph 5: A total of twenty-two commodes were reviewed at Grantham and District Hospital, five of these were soiled.



Graph 6: A total of one commode was reviewed at Louth County Hospital, which was not soiled.



The auditors established that there are a variety of commodes used by the Trust including Clinell®, Vernacare® and Design Bugs Out (DBO).

It demonstrated that commodes that were considered clean by clinical staff were not always cleaned to a high standard.

In response to these findings, a video was put together by the IPT and is available on the Trust intranet which goes through step by step how to clean a commode thoroughly in order to improve compliance, and can also be used for training, see link below:.

Link https://youtu.be/HSMU2gtkqhI

This will be a continued area of vigilance and review by both clinical teams and the IPT during 2017/18.

6. Hand hygiene audits

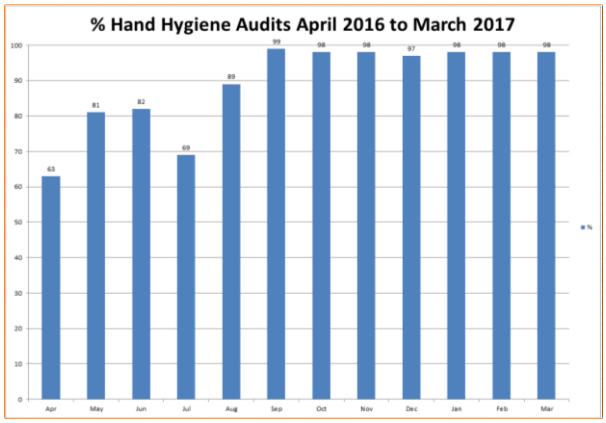
It is important that staff take precautions to prevent transmission of micro-organisms. All wards and departments have been required to undertake an audit each month, observing 10 staff members in their clinical area.

Questions asked are as follows:

- Hand hygiene performed before patient contact?
- Hand hygiene performed after patient contact?
- Bare below the elbow (wedding band only)?

- Are finger nails short and neatly manicured without nail varnish/false nails?

Graph 6: Shows the average % compliance each month for the trust for the year.



Overall compliance with hand hygiene audits has vastly improved over 2016/17 and will remain a focus for the IPT in 2017/18 with a view to updating the current tool and further publicising hand hygiene with awareness weeks and training sessions.

Surveillance

The IPT is responsible for conducting both mandatory and local surveillance. The aim of surveillance is to produce timely information on infection rates and trends, detect outbreaks, inform evaluations and changes to clinical practice and aid effective targeting of preventative efforts.

Surveillance of HCAI's can be defined as the systematic recording of infections using agreed definitions, with analysis, interpretation and dissemination of the results so that appropriate action can be taken. Surveillance is necessary to monitor trends in infection rates over time, detect outbreaks, and provide information for the planning of services and allocation of resources and to evaluate the impact of any interventions aimed at reducing infection risk. By targeting appropriate interventions, surveillance contributes significantly to reducing rates of infection and is recognised as an important contributor to good infection prevention and control practices.

Mandatory 'Target organisms' surveillance is conducted, and the data entered into the Public Health England (PHE) Healthcare Data Capture System (HDCS). The Trust complies fully with the mandatory surveillance system for HCAI's:

- Staphylococcal bacteraemias- MSSA and MRSA
- E. coli bacteraemia
- Clostridium difficile
- The mandatory orthopaedic surgical site infections for total hip and total knee replacements is undertaken by the orthopaedic teams across the Trust, this was conducted between January and March 2017, the results from this surveillance has not been published yet by PHE.

All serious incidents' associated with infections are reported to the Clinical Commissioning Group (CCG) and NHS England as per the definition

under 'Serious Incident Management System' (STEIS), and Public Health England.

Monthly surveillance reports have been circulated to all members of the IPT and the Trust Board. The reports include 'Target organisms' surveillance in addition to outbreak data, audit results, compliance with policy. These reports have been incorporated into the Trust Board performance management process, and reviewed by the CCG. Addition the IPT has provided monthly reports, including surveillance data on new cases of MRSA (infection and/or colonisation), all hospital acquired bacteraemia, *Clostridium difficile* infection, Glycopeptide resistant enterococci (GREs) and Extended Spectrum Beta Lactamase (ESBL) producing coliforms and outbreaks.

1. Mandatory Healthcare Associated Infection Surveillance

Each year objective thresholds for the reduction of healthcare associated infections are set by NHS England.

For 2016-17 the objective thresholds were set as:

- MRSA bacteraemia: zero cases
- *Clostridium difficile* infections: 59 cases

The IPT uses the Trust bacteraemia rates to monitor improvements within the Trust. The IPT undertakes a daily Cognos report (software used in the laboratory), this informs the IPT of all positive results following which an IP alert has been activated on Medway and the clinical areas notified and support and guidance provided. This process remains in place.

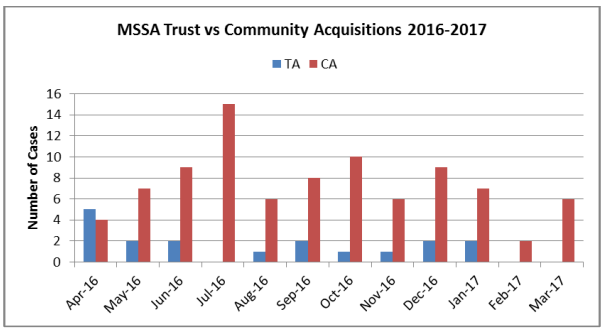
Meticillin Sensitive *Staphylococcus aureus* Bacteraemia (MSSA)

Staphylococcus aureus is a common bacterium that commonly colonises the human skin. Like Meticillin Resistant *Staphylococcus Aureus* (MRSA) it is a bacterium that causes a range of infections when the bacteria enter the body. The infections range from very minor (superficial skin infections) to life threatening infections of the heart valves, joint infections and blood stream infections. Between April 2016 and March 2017 the Trust reported 18 cases of Trust apportioned MSSA bacteraemia, and 89 cases of Non-Trust apportioned MSSA bacteraemia.

No reduction trajectory for MSSA has been set nationally; the work which the Trust has undertaken to underpin the significant reduction in MRSA bacteraemia supports prevention of MSSA, although patients are not routinely screened in the same way. However, in order to further reduce MSSA bacteraemia (both line and non-line related) the following strategies are planned for 2017/18:

- There will be continued effort to reduce the number of infections associated with medical devices, including intravascular and urinary catheters

Graph 7: Demonstrates the monthly counts of MSSA bacteraemia split by Trust apportioned (TA) and Non-Trust apportioned (CA) cases; April 2016 – March 2017



Graph 8: MSSA mandatory surveillance commenced in January 2011, this graph demonstrates the annual counts of MSSA bacteraemia since then. The Trust saw a slight decrease in the number of Trust apportioned MSSA bacteraemia during 2015-16.

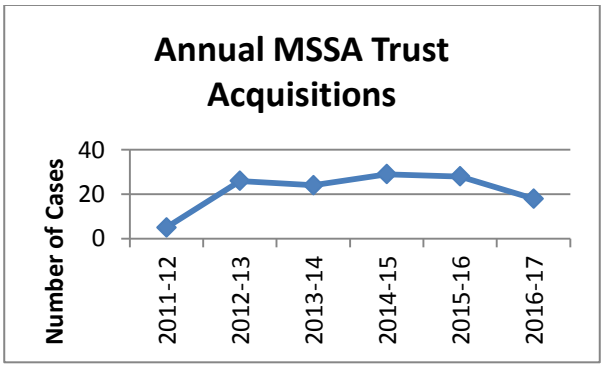


Table 5: Demonstrates the total number of MSSA bacteraemia patients receiving care within the Trust during 2016-17 and their attribution (either Trust acquired or Non-Trust acquired).

Month	Trust Acquired	Non-Trust Acquired
April	5	4
May	2	7
June	2	9
July	0	15
August	1	6
September	2	8
October	1	10
November	1	6
December	2	9
January	2	7
February	0	2
March	0	6

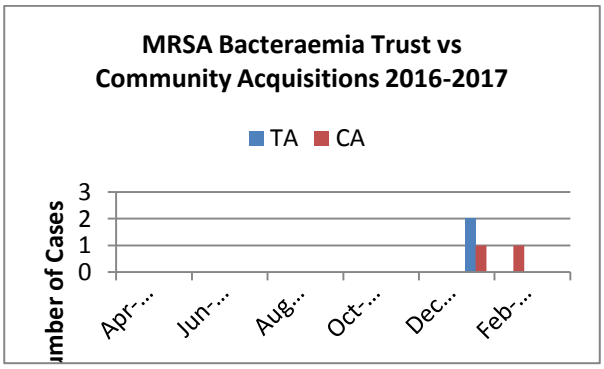
Meticillin Resistant Staphylococcus Aureus Bacteraemia

The Trust has reported it breached its external target of zero incidents of Meticillin Resistant *Staphylococcus Aureus* (MRSA) bacteraemia. Between April 2016 and March 2017 the Trust reported two cases of Trust apportioned MRSA bacteraemia and two cases of Non-Trust apportioned MRSA bacteraemia. A Post Infection Review (PIR) and a rigorous Serious Incident (SI) investigation were conducted by a multi-disciplinary team with support from the IPT for each case. The results and recommendations were reported to the Infection Prevention Committee. Implementation of the actions arising from PIR and SI was led by the Head of Nursing and the actions were monitored by IPC.

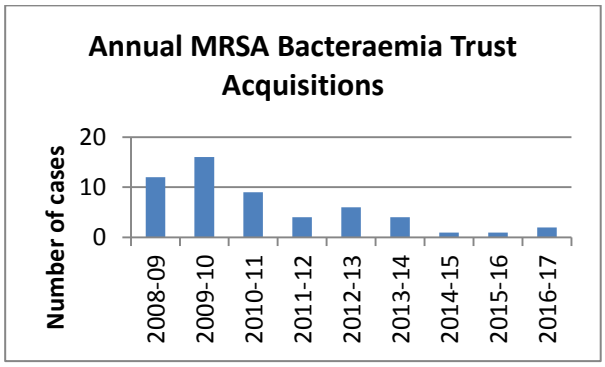
The national trajectory for the Trust for 2017/18 is zero cases of Trust apportioned MRSA bacteraemia. The work which the Trust has undertaken to reduce MRSA bacteraemia continues and further actions to reduce MRSA bacteraemia include:

- Continued effort to reduce the number of infections associated with medical devices, including intravascular and urinary catheters.
- PIR and SI will be performed on all MRSA bacteraemia, with the results of these investigations and their recommendations being monitored at the IPC

Graph 9 MRSA bacteraemia Trust cases vs Community cases for 2016-17



Graph 10: MRSA mandatory surveillance commenced in April 2010. The Trust has been monitoring MRSA bacteraemia since April 2008. This graph demonstrates the annual counts of MRSA bacteraemia since then. The Trust has made a steady decrease in the number of cases reported.



Escherichia coli bacteraemia

Escherichia coli (E. coli) are the most common cause of bacteraemia, with the highest rates being seen in those aged 64 years and older. The second most common group are those aged less than 1 year, with a higher incidence in males than females. Between April 2016 and March 2017 the Trust recorded 369 cases of E. coli bacteraemia. Using the same criteria as for MRSA bacteraemia, 62 of these cases were Trust acquired and 307 Non-Trust acquired. The Trust has remained static in the number of Trust acquired E. coli bacteraemias with a significant increase of Non-Trust acquired cases.

Graph 11: Trust acquired E.coli bacteraemia cases for 2016-17

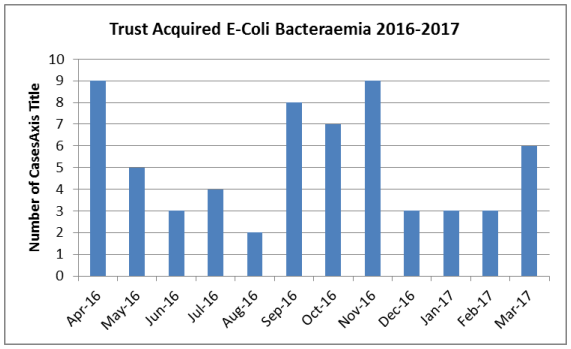


Table 6: The number of E. coli bacteraemia per month, including both Trust and Non-Trust apportioned cases from April 2016 to March 2017.

Month	Trust acquired	Non-Trust acquired
Apr	9	23
May	5	18
Jun	3	28
Jul	4	26
Aug	2	29
Sep	8	21
Oct	7	35
Nov	9	24
Dec	3	25
Jan	3	24
Feb	3	30
Mar	6	24
Total	62	307

Clostridium difficile infection

Clostridium difficile infections (CDI) are reported to Public Health England (PHE) for all patients over the age of two for the year 2016-17. Similarly to MRSA bacteraemia, cases of CDI that were attributable are those which occurred three days after admission. This year the Trust was able to report it remained within the identified threshold for incidents of CDI. The total number of cases attributable to the Trust being 59 cases (threshold set was 59 cases). The delivery of safe patient care related to CDI remains challenging. A threshold of 59 cases for 2017-18 has been set by PHE. The Trust will require greater focus on specifically vulnerable patient groups in order to further reduce cases of CDI in the forthcoming year. Patients admitted to elderly care are considered to be more at risk of acquiring CDI. This is in line with epidemiology of the infection whereby it is acknowledged that elderly debilitated patients are at increased risk of the disease.

Graph 12: Demonstrates the number of cases of C. difficile infection reported against the trajectory for the Trust during 2015-16.

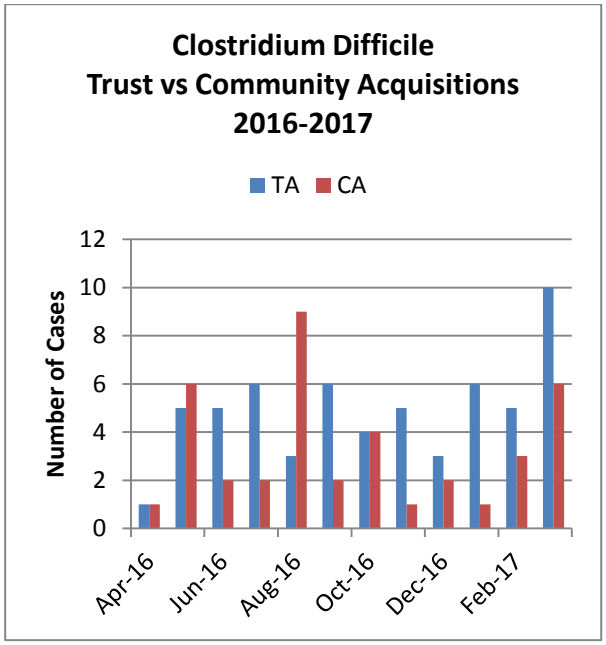


Table 9: Demonstrates the monthly acquisition against the monthly threshold for 2016-17.

RAG Status	Monthly trajectory	Number	Running Total
Apr	4	1	**2**
May	5	5	**6**
Jun	5	5	**11**
Jul	5	6	**17**
Aug	5	3	**21**
Sep	5	6	**17**
Oct	5	4	**31**
Nov	5	5	**36**
Dec	5	3	**39**
Jan	5	6	**45**
Feb	5	5	**49**
Mar	5	10	**59**
Total	**59**	**59**	

Table 10: Total number of hospital acquired C. difficile cases against the threshold for each year from April 2009 to March 2017

RAG Status	Year	Trajectory	Cases
	2016-17	59	**59**
	2015-16	59	**57**
	2014-15	62	**65**
	2013-14	52	**61**
	2012-13	61	**76**
	2011-12	92	**74**
	2010-11	144	**94**
	2009-10	211	**159**
	2008-09		**211**

Table 11: Demonstrates the total number of CDI patients who received care within the Trust during 2016-17 and their attribution (either Trust acquired or Non-Trust acquired).

Month	Trust acquired	Non-Trust acquired
Apr	1	1
May	5	6
Jun	5	2
Jul	6	2
Aug	3	9
Sep	6	2
Oct	4	4
Nov	5	1
Dec	3	2
Jan	6	1
Feb	5	3
Mar	10	6
Total	**59**	**39**

Table 12: Quarterly laboratory returns for Clostridium difficile testing for the Trust from April 2016 to March 2017

Quarterly C. difficile Laboratory testing returns April 2016 to March 2017

	Q1	Q2	Q3	Q4	Total
Total No stools	1568	1318	1378	1476	5740
C.diff toxin test	1105	948	1002	1104	4159
C.diff toxin +ve cases > 65 yrs	24	26	19	26	95
C.diff toxin +ve cases 2-64 yrs	3	6	7	5	21

Table 13: Demonstrates the number of C. difficile infection cases monthly for the past 5 years.

There has been a steady reduction in the infection rate for the preceding four years with a slight increase in the mean average during 2016/17. This will remain an area of significant focus during 2017/18.

	2012-13	2013-14	2014-15	2015-16	2016-17
Apr	1	6	7	2	1
May	4	4	8	3	5
Jun	7	8	7	4	5
Jul	9	3	6	3	6
Aug	11	8	5	5	3
Sep	6	7	10	7	6
Oct	8	3	5	5	4
Nov	7	8	5	2	5
Dec	6	6	2	9	3
Jan	2	3	3	4	6
Feb	6	2	6	6	5
Mar	6	2	6	7	10
Mean Rate	6.08	5.00	5.83	4.75	4.92

Orthopaedic surgical site infection surveillance

The Public Health England surgical site infection (SSI) surveillance service assesses speciality specific surgical site infections, on a quarterly basis. The Trust participates in this surveillance using the standard case definitions and surveillance methodology, which are provided to enable comparable rates to be produced. The reporting of orthopaedic SSI became compulsory in 2006, other components of the scheme remains voluntary. Although the Trust conforms to the requirements of the PHE SSI surveillance by undertaking at least one major orthopaedic procedure for at least 3 months every year, and submitted data for quarter 4 (January 2017 – March 2017), This data is being analysed by the PHE and has not been published at the time of writing this annual infection prevention report.

1.1 Non-mandatory surveillance

Glutamate Dehydrogenases

All clostridium difficile strains appear to produce the cell wall associated enzyme glutamate dehydrogenases (GDH) antigen. Rapid testing methods for C. difficile infection continues to be conducted on all samples that conform to the testing criteria received in the microbiology laboratory from inpatients over the age of 2 years. As from April 2012, the Trust has continued to implement the national guidance for C. difficile testing, which consists of conducting glutamate dehydrogenase (GDH) test first; if this is positive the sample is then processed for C. difficile toxin testing. It has been proven that approximately 20% of patients who are positive for the GDH antigen of C. difficile carry a non-toxigenic strain of C. difficile (Willis et al 1992, Altaie et al 1994 and Barbut et al 2000).

Graph 13: Demonstrates the number of positive GDH positive per toxin negative cases across the health economy. In total there were 244 positive GDH positive per toxin negative across the health economy, with 144 cases being identified as Trusts acquired and 100 cases as Non-Trust acquired.

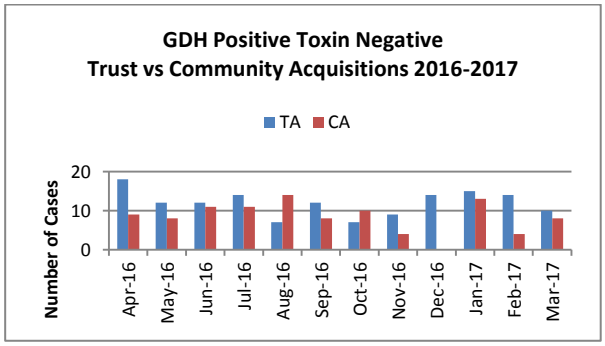
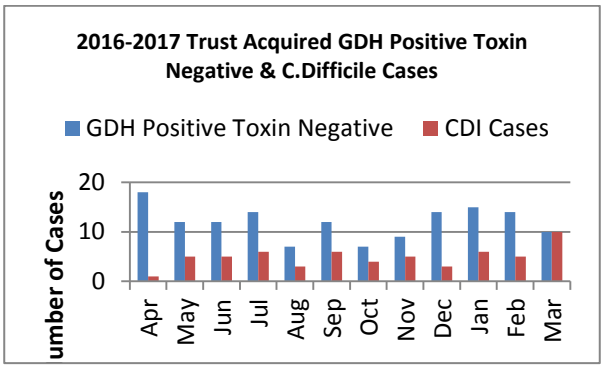


Table 14: Demonstrates the increase in year-end cases of C difficile positive/toxin negative (GDH)

for 2016-17 in comparison to 2015-16 for Trust acquired cases, and an increase in Non-Trust acquired cases.

Month	2013-14		2014-15		2015-16		2016-17	
	Trust acquired	Non-Trust acquired	Trust acquired	Non-Trust acquired	Trust acquired	Non-Trust acquired	Trust acquired	Non-Trust acquired
Apr	5	2	6	6	18	11	18	9
May	7	3	5	2	14	7	12	8
Jun	4	6	7	5	16	15	12	11
Jul	13	4	2	4	18	8	14	11
Aug	7	7	3	3	16	19	7	14
Sep	3	2	6	3	21	13	12	8
Oct	7	4	5	8	11	10	7	10
Nov	4	3	9	5	13	11	9	4
Dec	5	5	2	3	14	15	14	0
Jan	7	3	3	3	14	14	15	13
Feb	8	2	6	0	14	6	14	4
Mar	1	3	5	3	15	17	10	8
Total	71	44	59	45	184	146	144	100

Graph 14: Demonstrates C. difficile cases both toxin positive (CDI) and toxin negative (GDH) cases that meet the criteria for Trust acquired during 2016-17.



There are five key measures that the Trust put into place in order to minimise the risk posed by Clostridium difficile:

- Rapid isolation of a patient with diarrhoea within 2 hours of onset, to prevent the spread of infection to other patients and reduce environmental contamination
- Enhanced environmental cleanliness, reducing the level of spores contaminating the environment and the likelihood of further transmission to other patients
- Prudent antimicrobial prescribing. To reduce the risk of destroying the normal protective bowel flora and minimise the risk of C. difficile infection
- Compliant hand hygiene practice: to prevent person to person transmission of spores
- Personal protective equipment: for good infection prevention practices and protection of staff and patients
- Weekly review of all GDH positive patients and CDI

<u>New clinical cases of MRSA colonisation</u>

In line with the 'Code of Practice', the Trust has put in place a 'systematic approach' to MRSA screening of patients either on their admission or prior to their admission i.e. pre-assessment clinics. Due to the complex pathways the patients are referred to in the Trust, capturing the relevant information can be challenging, but this work is vital as it enables the IPT to continue to monitor all new cases of MRSA colonisation and/or infections (MRSA bacteraemia is not included in this surveillance).

Table 15: Number of new MRSA acquisitions compared to the previous years.

	Pre 48 Hours	Post 48 Hours	Total
2010-11	341	67	408
2011-12	353	49	402
2012-13	370	54	424
2013-14	389	49	438
2014-15	318	33	351
2015-16	448	37	485
2016-17	530	42	572

During 2016-17 in-patient MRSA screening was taken and processed by the microbiology laboratory, which identified a total of 572 new MRSA isolates, 5308 were pre 48 hrs (community acquired) and 42 were post 48 hrs (hospital acquired). These results were isolated from clinical and screening samples. The number for 2016-17 is slightly higher when compared with previous year periods. All MRSA positive patients, whether new cases or cases that the IPT are aware of will have a 'Target Organisms' alert flag on the Patient Admission System (Medway), and their health records. All newly identified inpatient cases are visited by the IPT who instigate appropriate infection prevention and control measures.

National studies have shown that the risk of colonisation with MRSA increases with the length of stay in hospital, with the most commonly colonised sites being wounds or indwelling devices. Patients that fit the screening criteria have been swabbed from nose and groin, including screens from any wounds, indwelling devices and urine sample if they have a urinary catheter insitu patients who have had positive results have been screened weekly until there have been 3 consecutive negative swabs and commenced on the Trust decolonisation protocol.

Table 16: Shows the number of MRSA screens undertaken in the Trust during 2016-17, as percentage of the total elective and non-elective admissions per month.

Month	% of Screens
Apr	62.6
May	64.37
Jun	61.29
Jul	61.5
Aug	59.96
Sep	60.55
Oct	59.3
Nov	62.52
Dec	70.32
Jan	72.5
Feb	72.55
Mar	75.82

<u>Carbapenemase-producing Enterobacteriaceae</u>

Carbapenemase-producing Enterobacteriaceae (CPE) is a group of bacteria that are highly resistant to many antimicrobials including carbapenems (meropenem, imipenem). Some isolates are resistant to all currently available antibiotics. Many of these bacteria usually live harmlessly as part of the gut flora and play an important role in the digestion of food. Currently London, Manchester, Liverpool, Hull, Leeds and Sheffield are affected; these bacteria represent a major threat to public health. We have seen sporadic cases within the Trust during 2016-17. The devastating impact of CPE in these health

economies highlights the importance of the Trust having robust infection prevention and control practices in place consistently to prevent the spread of these bacteria.

Tuberculosis

Tuberculosis (TB) is a bacterial infection spread through inhaling tiny droplets from the coughs or sneezes of an infected person. It is a serious condition, although it mainly affects the lungs, it can affect any part of the body. It can be cured with proper treatment. Tackling TB is one of the key priorities for Public Health England. During 2016-17 the Trust has seen a slight increase in the number of suspected and/or confirmed cases of TB.

Table 17: Demonstrates the number of suspected or confirmed cases, which have received treatment either for their TB or other medical conditions as an in-patient within the Trust.

	Site	Suspected	Confirmed
Apr			
May	LCH		MTB
Jun	LCH		Quantiferon Gold
	GDH	AFB+	
Jul	GDH		MTB
Aug			
Sep			
Oct			
Nov	PHB		MDRTB
Dec	PHB	AFB+	
	PHB		MTB
Jan	LCH		MTB
Feb	LCH		Quantiferon Gold
Mar	PHB		Quantiferon Gold
Total		**2**	**8**

1.2. Outbreaks

During 2016-17 the Infection Prevention Team managed a number of outbreaks within the Trust.

Norovirus

Outbreaks of norovirus are essentially difficult to predict, and have a significant impact on the operational services of the Trust; it impacts upon elective activity and the correct placement of patients on wards. Due to the sudden onset of symptoms there is frequently no prodromal period prior to the onset of vomiting/diarrhoea. Norovirus circulates within the community throughout the year and people can incubate the virus without showing any symptoms. The challenge for healthcare providers is once the infection is introduced into the environment by someone who is incubating the infection on admission, it is very easily spread to others.

Table 18 : Norovirus outbreaks Trust wide: Key:

- C : Laboratory Confirmed case,
- S : Clinically Suspected case,
- Pt : Number of patients affected

	Ward	Pt	Staff	Norovirus C/S
Apr	Ward 1, EAU, CCU GDH	12	3	C
May	Ward 1, 2, 6 EAU GDH	31	6	C
Jun				
Jul	7B PHB	3	2	S
Aug	NNU PHB	3	0	S
	6A PHB	4	0	S
Sep				
Oct	AMU PHB	3	0	S
	8A PHB	8	9	C
Nov	7B PHB	7	2	S
	MESS LCH	5	0	S

Dec	3B PHB	6	0	S
Jan				
Feb				
March				

Lincoln County Hospital

During 2016-17 there were 3 outbreaks reported on the Lincoln site.

Clostridium difficile Hatton ward

Hatton ward was closed from 8th June 2016- 26th June 2016 following an outbreak of clostridium difficile. Four patients acquired the infection and ribotyping results highlighted three patients with the same strain, which proves that cross infection occurred on the ward. The ward was cleaned and disinfected with hydrogen peroxide vapour prior to re-opening. The IPT provided training on the ward, working alongside staff to ensure the correct isolation of patients, cleaning of equipment and correct hand hygiene techniques.

Parainfluenza 3 on SCBU

Parainfluenza viruses cause a spectrum of respiratory illnesses –upper and lower respiratory tract infections. Most children are infected by parainfluenza 3 by the age of 2 years.

Three cases of parainfluenza 3 were acquired whilst in hospital in the HDU bay on the SCBU. The bay was closed to new admissions on Monday 6th June 2016 and an outbreak meeting was held. The IPT worked closely with PHE. Two parents and several staff members had cold symptoms which is the most likely transmission route. All three babies recovered well and the bay was deep cleaned and re-opened on Friday 10th June.

Influenza H3 Waddington ward

Influenza A virus subtype H3 is a subtype3 of viruses that cause influenza (flu).

Waddington unit was closed from 22nd February 2017 to 27th February 2017. Seven patients acquired influenza A during their hospital stay and one case was admitted with it. The IPT worked closely with PHE and regular outbreak meetings were held. Symptomatic patients were isolated in single rooms and prophylactic antibiotics were given to high risk patients as a precautionary measure. The ward was deep cleaned and curtains changed prior to re-opening.

Pilgrim Hospital, Boston

Stenotrophomonas maltophilia- ICU

Three patients were identified as having acquired Stenotrophomonas maltophilia on ICU in September 2016. - 2 of these were found to be related and part of the same cluster. A review group meeting was held and the following actions have been put into place:

- Full sampling of all taps across the unit undertaken including pre and post samples
- Point of use filters fitted in bays 1-8
- Review of scope use in August and cross referencing with endoscopy and review

of decontamination process if non disposable equipment used.

Serious Incidents, Periods of Increased Incidence and Outbreaks

The Trust reports any incident which meets the definition of a serious incident as requested by NHS England. These include incidents where there has been an impact on the running of the organisation i.e. ward closure, or where there has been a severe impact on patient outcome.

The reports are submitted via STEIS within 24-48 hours of the IPT becoming aware of the event, which would include the following:

- All MRSA bacteraemia
- Clostridium difficile, classified as 1a or 1b on the death certificate where clostridium difficile has made a significant contribution to the cause of death
- Outbreaks
- Infected healthcare worker or patient incidents necessitating consideration of look back investigation
- Significant breakdown of infection control procedures with an actual, or potential for, cross infection

The Trust is required to report to the CCG those incidents that fulfil the Serious Incident (SI) criteria; the following summarise these requirements:

- Two MRSA bacteraemias were reported
- There was one (1) Clostridium difficile patient that was classified as 1a on the death certificate where Clostridium difficile had a significant contribution to the cause of death
- SI's were completed for ward closures due to outbreaks

MRSA bacteraemia Carlton- Coleby ward, Lincoln, January 2017

Post infection review (PIR) was carried out and reported as per guidelines. Action plan was compiled and actioned at the time.

Contributory factors:

- Lack of review of medical patient when outlied to a surgical ward over the Christmas period
- Potential transmission by lack of compliance with hand hygiene and general cleanliness of the ward as there was 2 other patients that acquired colonisations of MRSA during this time period
- Patient had multiple cannulations and gaps in VIP scoring
- Need to continue to improve antimicrobial prescribing standards
- Need to improve pharmacy clinical checking of prescriptions for appropriateness/highlighting risks and prescriber awareness of need to document decisions.

As a consequence of this, the process to ensure that all outlied patients have a named clinician has been strengthened and training sessions undertaken for staff. VIP scores have improved by having insertion records attached to the prescription sheets and an increased number of pharmacy audits have been carried out.

MRSA bacteraemia Shuttleworth ward, Lincoln January 2017

Contributory factors:

- No wound swab taken on admission or throughout stay
- Poor documentation- nursing and medical
- Medical plan not always documented or clear plan in place
- Medications omitted prior to surgery. Medications not given as patient was nil by mouth. Clear protocol is in place for administration of medicines pre-operatively.

As a consequence of this, staff have been reminded to swab wounds, about general documentation and also reminded about policy for nil by mouth patients.

MRSA bacteraemia 5B Boston, May 2016

Post infection Review (PIR) was carried out and reported as per guidelines. This was an interesting case- the type t011 was associated with so-called livestock and associated lineage belonging to MLST clonal complex 38.

This was reviewed by PHE Professor Angela Kearnes and the case was removed from the trust figures as this is an animal associated clone and the first invasive isolate among humans reported in the UK. The patient's son had inherited a farm which has livestock and it was felt this was how transmission had occurred.

1.3 Other infection related outbreaks

There were other infection related incidents which were dealt with by the IPT between April 2016 and March 2017. These were either suspected or confirmed Periods of Increased Incident (PII) of Clostridium difficile and clusters of MRSA patients. These incidents were reported internally via Datix, and as required to the PHE, CCG as part of the internal mandatory surveillance of HCAI i.e. PII related to C difficile. Reports on these incidents are available from the IPT. A summary of the reports is available below

Table 20 below: Highlights period of increased incidents/outbreaks caused by other pathogenic microorganisms.

	Ward	Type of incident	Microorganisms identified
June 2016	Lancaster-Lincoln	3 patients acquired colonisation with same strain	MRSA
Oct 2016	ICU-Lincoln (10/10/16-31/10/16)	PII (Ribotyping different-002 and 016)	Clostridium difficile
Nov 2016	6A- Boston (28/11/16-19/12/16)	PII (Ribotyping different 014 and 2017)	Clostridium difficile
Jan 2017	Dixon - Lincoln (05/01/17-02/02/17)	PII (Ribotypes – unable to be typed)	Clostridium difficile
March 2017	5B- Boston (27/03/17-18/04/17)	PII (Ribotypes different	Clostridium difficile

		012 and 023)	

* PII – Period of Increased Incidence, two (2) or more cases occurring >48hrs post admission (not relapses) in a 28 days period on one clinical area.

It is reasonable to assume following the ribotyping (genetic fingerprinting) and MLVA typing (a more discriminative typing system) results that, currently, person-to-person spread through patients or staff represents the most likely route of transmission. The importance of prompt isolation, use of personal protective equipment and hand hygiene in the prevention of further cases of C difficile infection cannot be over emphasised.

When a ward has a PII, the following actions have been implemented by the IPT:

- Isolating appropriately according to the Trust Isolation Policy
- Implement control measures i.e. correct use of PPE, cleaning of the environment and equipment, in the case of C. difficile the removal of the alcohol based hand rub from the point of care
- Complete DATIX
- Communication email is circulated to Clinical Staff, Senior Management Team, DIPC, IPT, Consultant Microbiologist, Operational Team & Bed Managers
- Patients, and where necessary carers/relatives, are informed and kept up to date with the situation
- Sample is forwarded to the Reference Laboratory for ribotyping
- RCA investigation is commenced
- Hot spot/CDI audits are undertaken by the IPT
- Communication with external stakeholders i.e. CCG, PHE

1.4 Blood culture contamination

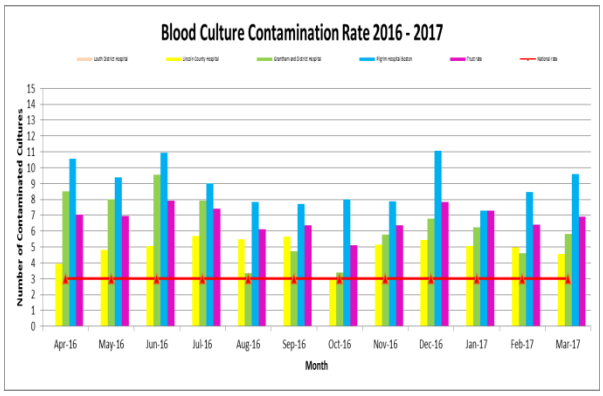
Patients who develop a fever or evidence of sepsis will have blood taken and forwarded to the microbiology laboratory for testing, referred to as blood cultures. From this, a diagnosis of bacteraemia can be made.

The criterion for a bacteraemia to be recorded as hospital acquired is that the blood sample was taken more than two days after admission. To ensure safe and effective care the trust tracks the number of blood cultures which have been contaminated at some point during the blood sampling process.

Table 21: Demonstrates the number of blood cultures taken per hospital site between April 2016 and March 2017. The Department of Health aspiration rate is <3%.

Hospital site	No of blood cultures	% rate of contamination
GDH	2280	7.07%
Louth	206	3.11%
PHB	7430	9.08%
LCH	8670	5.33%

Graph 15: Highlights the individual hospital site blood culture contamination rate for 2016-17 against the DH recommendation of <3% contamination rate



The 2017/18 work programme includes a specific patient safety project to reduce the number of contaminated blood cultures.

Section 5

Education

Our vision is to provide consistently excellent and safe patient-centred care, through staff having the required knowledge to reduce the risk of infections.

The Trust has a statutory obligation to ensure that all staff receive appropriate education and training in infection prevention and control. The 'Code of Practice' also requires that induction and training programmes for new staff and on-going education for existing staff should incorporate the principles and practice of prevention and control of infection.

All healthcare workers, whether or not they are involved in direct patient care, must acknowledge that compliance with the principles of infection prevention practice with all patients at all times helps to minimise the transmission of infection between patients, staff and visitors.

Many patients are vulnerable to infections, this can delay their recovery or can even be fatal. Infections also considerably increase the costs to the Trust.

Although there is a wealth of infection prevention information and evidence available, this is often inaccessible to those working at ward or department level. Education is recognised as having an important role in preventing and containing infections. Training and education is essential to promoting safe practice, and is integral to the overall delivery of an effective infection prevention and control service. The purpose of infection prevention training is to enhance and develop staff knowledge with regard to the standard infection prevention principles, to target microorganisms and target conditions in order to facilitate safe, effective infection prevention practice and thus prevent the spread of infection and improve our patient outcomes.

Training and education remains pivotal to the Trust's approach to reducing infection rates and can occur in many forms, both formal and informal. During 2016-17 the IPT has continued to be proactive in the delivery of education and has utilised a number of methods including meetings, face to face training sessions, practical training sessions, hand hygiene practice and ad-hoc sessions to optimise ward based healthcare by providing education that emphasises infection

prevention. All training packages reflect basic infection prevention principles as well as highlighting local issues i.e. local surveillance.

An annual education programme is produced which outlines the Trust training programme, which includes an assessment of the training needs of different staff groups and is designed to meet local and national educational needs and requirements. Infection prevention training continues to be embedded in many of the Trust's training and education programmes.

All new staff to the Trust receive basic infection prevention training from the IPT as part of their induction to the Trust. New staff who do not attend are chased up by the Education and Training Department, to ensure they attend at a later date.

The Core Module (mandatory) update included a 15 minute face to face presentation for non-clinical staff followed by a 30 minute face to face presentation for clinical staff. The sessions focus on providing information related to the basic principles of infection prevention practices.

The IPT also provided bespoke general infection prevention training, including hand hygiene utilising the 'glow box' for wards on all hospital sites.

The IPT continues to provide education in different ways to meet the needs of the Trust, it is becoming increasingly difficult for staff to be released from their duties and to this end the IPT are increasingly delivering training at ward/department level, in addition ad-hoc training for individual wards/departments is provided if that area has specific requirements.

1. Core Module and Induction Training

During 2016-17 the IPT provided sessions of Core 1 module, and 30 sessions of the General Induction CL.

Table 21: Numbers of attendance at the Core Module and Induction Training per staff group for 2016-17.

Overall, compliance for core learning has increased with 88% of nurses/midwives undertaken training compared with 70% last year and non-medical staff was 86%, compared with 67% for last year.

Staff Group	Infection Control - 1 Year
Add Prof Scientific and Technic	86%
Additional Clinical Services	84%
Administrative and Clerical	86%
Allied Health Professionals	89%
Estates and Ancillary	79%
Healthcare Scientists	90%
Nursing and Midwifery Registered	88%
Students	100%
Medical and Dental	84%

The following topics are included in these training sessions:

- Hand hygiene
- Waste management

- Multi resistant organisms
- Clostridium difficile
- Norovirus
- Personal Protective Equipment (PPE)
- Management of linen
- Sharps management
- Decontamination
- Risk assessment
- Aseptic Non Touch Technique (ANTT)

2. Training sessions provided by the Infection Prevention Team

Infection prevention is an integral part of Induction and Core Module (mandatory) update training, as well as several bespoke training sessions.

Education continues to be a focus for the IPT in 2017/18 and plan to review the content for the core learning sessions.

Table 22: Demonstrates infection prevention and control training undertaken in 2016-2017

Month	Audience	Topic
Lincoln County Hospital		
April 16	HCSW induction	Hand hygiene, isolation, alert organisms, decontamination
May	All staff	Hand hygiene drop in sessions
June	HCSW induction	Hand hygiene, isolation, alert organisms, decontamination
Jul	Sixth form students	Hand hygiene, sharps and isolation x 2 sessions during July
Jul	All staff	Hand hygiene drop in sessions
Aug	Trained nurses	IV study day
Oct	Philippine trained nurses	Hand hygiene, alert organisms, isolation of patients, waste management
	All grades	Norovirus awareness week
Nov	All grades	Fit test training x7 sessions
Dec	All grades	IV study day Medical
	Medical students	All infection prevention principles, target organisms and other related topics
Jan 17	All grades	Fit test training x2
	Trained nurses	IV study day

Month	Audience	Topic
Grantham and District Hospital		
May	All grades	Link practitioner day
Aug	All grades on Ward 1	Isolation nursing
Oct	All grades	Drop in sessions on norovirus - samples, testing, isolation, documentation, restriction and closure of wards
Oct	All grades	Hand hygiene awareness
Nov	Nuclear medicine	Infection Prevention update

Month	Audience	Topic
Pilgrim Hospital Boston		
Apr	Trained nurses	Injectable medicines
May	All grades	Hand hygiene awareness
Jun	Acutely ill course	General IP precautions
	All grades	Blood culture pack training
	All grades	Link practitioner day
	HCSW induction	Hand hygiene, isolation, alert organisms, decontamination
Jul	Clinical educators	IP update
	All grades	Blood culture pack training
	Trained nurses	Injectable Medicine study day
Aug	HCSW induction	Hand hygiene, isolation, alert organisms, decontamination
	Vascular	IP update

	sonographers	
	AAA screening service	IP update
Sep	Trained nurses	Management of the Acutely Ill Patient
Oct	All grades	Link practitioner day
	Physio's	Respiratory update
Oct	Trained nurses	Injectable medicines
	HCSW induction	Hand hygiene, isolation, alert organisms, decontamination
	Occupational Health	Saving lives High Impact Interventions
	Physiotherapy	Saving lives High Impact Interventions
Nov	Trained nurses	IV study day
	Trained nurses	Acutely ill course
	OT	IP update
Dec	All grades	Fit testing x4
Jan	All grades	Link practitioner day
	HCSW induction	Hand hygiene, isolation, alert organisms, decontamination
	All grades	Fit test training
Mar	Junior doctors	Hand hygiene, isolation, alert organisms, decontamination

Section 6

Our staff health is important to us. Occupational Health works closely with the Infection Prevention Team to ensure that staff are protected against infection.

Seasonal Flu Vaccination

The Trust achieved a flu vaccination take up of 70.13% front line staff in ULHT for 2016/17. The Trust flu plan for 2017/18 is now in place and in the process of been implemented following approval at the Trust IPCC and by NHS England.

NHS England have confirmed that the final date for reporting flu immunisations for frontline health care workers will be the end of February 2017. This is two months more than 2016/17

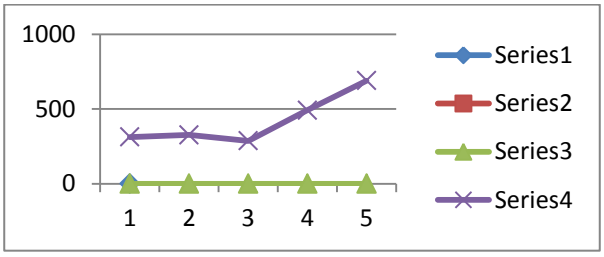
NHS England have attached a CQUIN to this year's flu campaign, the payment schedule is the full value of the CQUIN for 70% and over for £235.000. While the CQUIN is important from the financial point this is about protecting patients, staff and their families

The Trust have agreed to aim for the 75% and over target.

Immunisations and Vaccinations

In accordance with the current policy and Department of Health guidelines the Occupational Health Service has undertaken blood screenings and vaccinations (MMR, chicken pox, Hep B and BCG). Hepatitis B vaccinations are given to all staff whose work involves exposure to body fluid both at pre-employment and during employment The snap shot below shows the similar number of immunisations and serology and then the increase in July and August for serology and vaccination consistent with the movement of Doctors.

Immunisation & serology for ULHT 01/04/16 – 31/08/2016				
Apr	**May**	**Jun**	**Jul**	**Aug**
313	327	287	491	689



The issues of non-compliance with staff not being immunised results from staff failing to attend their appointments. This has improved on last year but we will be looking at other ways to improve attendance this year. This will involve the use of the OH management system and text messaging. Occupational Health contacts all managers for follow up action and re-referral but is aware that not all staff re-book.

BCG vaccine availability.

BCG vaccination for occupational health reasons has remained the lowest priority during this period of constrained BCG vaccine supply. Occupational health departments and infection control teams have advised to reinforce their local TB infection control precautions to all staff.

Where a health care worker is found to be tuberculin negative and is eligible for BCG, vaccination is not required before that individual is cleared to work. Vaccination can then be undertaken when further stock becomes available, OH have maintained a list of those that may require vaccination.

Occupational health providers are now able to order InterVax BCG vaccine through ImmForm. There is currently a restriction of 2 packs per fortnight for these accounts and this restriction will remain under review.

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The new Green book draft will outline those high risk groups who can be vaccinated. It will mean a lot of work for NHS OH services as it is an unlicensed vaccine, e.g. prescriber to see individual, get history and then sign prescription but numbers are likely to be manageable as there are limited numbers of staff working in mortuary or respiratory units. Furthermore, NHS staff typically do not rotate.

Sharps Injury Prevention

Needle stick injuries and other sharps injuries are among the most common and serious risks to healthcare workers. Sharps injuries are primarily associated with occupational transmission of hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).

Sharps Injury management

The main reason for inoculation injuries continues to be in insulin pen needles and incorrect disposal of sharps and a number of incidents have involved sharps boxes. Sharps boxes being used incorrectly can be a risk to staff and sometimes we are unable to identify the source patient, such incidents can by the nature of the risk because an increased psychological and emotional trauma to the individual member of staff involved.

The incidence of inoculation injuries is reported at both the Infection Prevention and Health and Safety committees and the risk is been addressed through the Safer Sharps Group. Safer sharps are being introduced into the Trust wherever possible.

In 2016/17 there were 165 reported inoculation /splash injuries to ULHT employees and out of these 4 were considered high risk and 3 commenced on post exposure prophylaxis.

Out of these incidents, 113 were not using a safer sharps device, 25 were using a safer sharps device and 27 were unknown. As the number of safer sharps devices increase we should see a decline in incidents. The Occupational Health Service has produced a range of information in leaflets, post cards and business cards to support management of inoculation injuries and has undertaken training for medical staff, A&E staff and site coordinators in the management of inoculation injuries.

The highest incidence of injuries occurred for the nursing and midwifery group who had 95 incidents and medical staff had 52 incidents.

Monthly reports are provided to the IPCC meetings and quarterly for the Health and Safety committee for inoculation injuries in the Trust.

Section 7

Estates and Facilities

Continuous measurement and management of performance of Estates and Facility Services is fundamental in the control of hospital acquired infection.

1. Cleanliness

Cleanliness remains high on the Trust agenda and regular meetings continue to be held at all levels of the organisation. The monitoring of clinical areas is undertaken by the Facilities Department on a weekly and monthly basis following the National Standards of Cleanliness guidelines (2007) using "MiC4C", which is a cleanliness monitoring software product. The results are fed back to Ward and Department Leaders, Matrons, Heads of Nursing and the Infection Prevention Team (IPT). The scores and any actions needed are discussed at the various site IP meetings as well as the Trust IP Committee meeting. Louth is in the process of being added to the system and with a view to commencing the audits here by the end of 2017. Scores for 2017 by site are attached.

2016-17 MiC4C Summary Scores.pdf

Facilities are involved with the management of outbreaks with the IPT, from whom the lead on an appropriate response is taken, clinical staff and other Trust staff enable areas to be brought back in to service in a timely fashion.

Some wards have implemented disposable bed curtaining for clinical areas across the Trust. These are either changed in accordance with curtain changing regime or if they are contaminated with blood fluids, or following isolation care.

2. Housekeeping Review

A Housekeeping Review was carried out by Litmus Partnership. This focused on staff levels, supervision and management of ward based Housekeepers.

Nursing and Facilities have jointly produced an Executive Team report identifying the additional resources outlined in the Litmus report. We have also agreed to trial four wards transferring the direct management of Ward Housekeepers from nursing to Facilities.

Hydrogen Peroxide Vapour "Fogging" of MEAU was also undertaken, this was the first time ULHT had utilised this method of decontamination. Facilities and IPT are investigating how to utilise this system in the future.

3. Deep Clean Programme

The most efficient way to carry out a Deep Clean is to fully decant the ward. This is currently not an option on any site, so the Deep Clean system is planned to clean a ward bay by bay, room by room. Facilities Deep Clean teams can clean one

bay a day providing the patients are relocated in advance. The Facilities Deep Clean Teams on the Pilgrim and Grantham sites started the year following a Deep Clean programme. At Pilgrim this has not been maintained as MiC4C scores indicated that additional support was required on some wards. The Pilgrim Deep Clean Team is currently acting as a "response team" targeting areas with low scores.

Lincoln have yet to agree a Deep Clean programme, discussions with the Site Management Team are ongoing. The Deep Clean Team is acting as a "response team" targeting areas with low MiC4C scores.

4. Waste Management

Waste Pre Acceptance Audit

The Trust is required to complete a Pre Acceptance Audit for all sites annually to ensure the Trust is compliant with regard to Waste Segregation.

The audits are completed in May each year and are forwarded to SRCL, the Clinical Waste Contractor. The information is checked by the company's compliance department, which is a mandatory requirement for the Environmental Agency. If the audits are not undertaken, waste would not be collected by the Contractor.

Initially, the Trust was required to undertake a full audit across all areas on each site. However, over the last 2 years the mandatory requirement has been to undertake audits on a third of each site.

5. PLACE

PLACE assessments were introduced in April 2013 to replace the former Patient Environment Action Team (PEAT) assessments undertaken from 2000-2012. These are the fourth results from the revised process.

Background

The aim of PLACE assessments is to provide a 'moment in time' snapshot of performance against a range of non-clinical activities. Notice of the assessment is given by HSCIS with a 6 week period in which to undertake the assessment and enter the results.

A team of staff and Patient Assessors undertook all 4 PLACE audits to standardise the scoring across the Trust.

Results

The results were released on 10th August 2017 and are available to the public on the NHS Digital website. The results for ULHT against last year are:

Criteria	Grantham		Lincoln		Pilgrim		Louth	
	2017	***2016***	**2017**	***2016***	**2017**	***2016***	**2017**	***2016***
Cleanliness	88.43%	*92.36%*	96.05%	*93.13%*	96.33%	*93.84%*	97.37%	*96.27%*
Food & Hydration	92.97%	*91.34%*	90.59%	*83.01%*	92.63%	*78.85%*	n/a	*94.61%*
Organisation Food	90.35%	*90.18%*	90.35%	*90.18%*	90.35%	*90.18%*	n/a	*90.18%*
Ward Food	93.97%	*91.75%*	90.64%	*81.48%*	93.24%	*75.81%*	n/a	*99.15%*
Privacy, dignity & wellbeing	77.95%	*71.88%*	80.82%	*79.20%*	79.65%	*85.19%*	71.72%	*65.15%*
Condition, maintenance & appearance	83.20%	*85.19%*	90.37%	*83.29%*	95.73%	*90.30%*	65.68%	*70.79%*
Dementia	58.58%	*55.08%*	64.34%	*59.12%*	67.25%	*66.98%*	50.65%	*73.48%*
Disability**	67.95%	*65.54%*	73.55%	*64.44%*	80.66%	*75.94%*	61.90%	*72.46%*

Observations

Cleanliness

The standard of cleanliness was generally perceived to be good, with issues only seen on a small number of the wards audited.

Food Service

The food service score improved across the Trust. The taste and quality of the food provided scored well, some minor issues remained on a small number of wards around the preparation for the meal service.

Privacy, Dignity and Well Being, Condition, Maintenance and Appearance, Dementia and Disability

The main issues were regarding the built environment and its condition rather than observations made of the caring practice of patients. Examples of criteria measured are given in Appendix 1.

Considerations and Learning - Preparation for 2017

Retaining involvement of experienced Patient Assessors and broadening this resource is essential. A de-brief event for the 2017 Assessors – Patient and Staff is to be organised for October.

6. Water Safety Group

During the past twelve months the Trust has made considerable improvements in delivering its water hygiene programme, essentially operating robust schemes across a number of key compliance requirements. However, there remain a series of challenges, which if not resolved with urgency have the potential to degrade the good work completed over the past twelve months. The key areas for consideration are:-

data handling, record keeping and the interface between PPM and the ACOP L8 logbook system requires further improvement and a common approach across all sites. The MiC4C system needs to be expanded and greater resource provided to turn it into a valuable Estates management tool. Currently, records are stored in both hard copy 'S' drive and on MiC4C. A more structured approach consistent across all three sites needs to be developed. The AE (Water) has provided a template for an electronic logbook.

The Facilities Compliance Team are reviewing the information currently held in different formats and locations. They will then migrate all relevant information onto the new logbook structure which will be held on the MiC4C system.

There are ACOP L8 Risk Assessments in place for all 3 sites. However, these are required to be reviewed due to the revised ACOP L8 (4th Edition) 2013 HSG 274 (parts 2&3) and the revised HTM 04-01 (March 2016), Parts A, B and C and recent infrastructure changes on all 3 sites.

Accurate and up to date records and schematic drawings remain an issue for all sites. The production of schematic drawings is being addressed as a project in 2016/17. This project is being monitored by a Sub-group of the Water Safety Group.

During 2015/16, a programme of training commenced for Estates personnel, Nursing, Housekeeping and Directorate Managers in Water Hygiene awareness. The Water Safety Group have trained and appointed responsible persons for water safety across each site and also have a Trust wide responsible person who chairs the Water Safety Group.

As required by the revised HTM 04-01 (March 2016), Parts A, B and C additional training for Estates personnel will be required to be facilitated.

Whilst the basis of a *Pseudomonas* Risk Assessment is in place this needs to be rolled out to each augmented care discipline with the necessary risk factors being noted and acted upon. This is under review by the Water Safety group, with specialist advice from Trusts Water Authorised Engineer (AE).

The Chlorine Dioxide regimes operating on all sites provides an essential secondary control measure on the cold water systems. There have been issues at Lincoln County Hospital, which the service provider has now addressed and all three sites can demonstrate robust treatment levels within HSG 274 Part 2 guidelines. This is constantly reviewed by the AE water. Given the susceptibility of the cold water systems to temperature gain across all sites there are periods where this secondary measure is indeed primary and therefore the on-going performance is a crucial element within the Water Hygiene Programme

The Legionella & Pseudomonas surveillance programme on all 3 sites was widened. To optimise patient sinks the use of 'point of use' filters has been expanded. This must be viewed as a 'short-term' measure and kept under constant review. The failure to complete a range of Planned Maintenance tasks, due to lack of manpower and access issues and the presence of asbestos, remains a servicing concern. It is essential that Planned Maintenance tasks are carried out as planned, as if not, it has the potential to seriously impact on water quality. Other typical factors which are influencing the water distribution system are:-

- Ageing infrastructure and assets
- water chemistry causing scaling of outlets and pipework
- mixture of materials utilised throughout the water distribution system (plastic/copper) which restrict the ability to provide effective disinfection.

A key factor in the control of waterborne pathogens is the identification and management of "little used outlets" and the implementation of a "robust and effective" flushing programme. Where this has been successfully implemented, the results have improved considerably.

A further issue is the presence of outlets that are no longer used/required. A survey to identify outlets that are no longer required should be carried out on all 3 sites. This process needs to be supported by the Nursing Teams, as they will be aware of the changes of water outlet requirements.

The water sampling (Microbiology) programme has played a key role throughout this year in the identification of water hygiene issues that when acted upon have the resultant effect of improving water quality across the Trust. This programme provides key supportive evidence of the Trust's effectiveness in managing water quality. This programme continues to identify issues and risk factors, it is therefore an essential tool in ensuring 'safe water systems'.

Routine testing has been for *Legionella*; TVC at 22°C; TVC at 37°C; testing for this has now been ceased on the advice of the Consultant Microbiologist. *Pseudomonas aeruginosa.* Specific testing was completed at Pilgrim Hospital Boston in respect of *Stenotrophomonas maltophilia* within Intensive Care Unit following an identified patient issue. The on-going investigation did not track this back to be the water system, however, it provided evidence to assist the Estates Team in improving water hygiene within this unit by modifying tap design. The changes are still being implemented and nearing completion. The trigger for stenotrophomonas sampling is through the IPT.

There are concerns regarding water quality (Legionella) in the old maternity building – leading to blanket installation of point of use

(POU) and inline filters for 3 months or until opening of new units.

Upon commissioning of new maternity units the old maternity block floors 1 to 4 will be closed and decommissioned.

The completion of the Trust Water Quality Policy and Water Safety Plan, combined with an active "Action Plan" recording mechanism, continues to place the Trust on a sound footing. It must be stressed that changes for both Water Safety Policy and Water Safety Plan are an on-going process to keep pace with changes on each site and improvements in legislation and/or guidance. The completion of the key points raised within this summary, combined with adherence to best practice, will ensure a water hygiene programme that will be effective, demonstrating compliance and governance. The Trusts AE regularly reviews all the various updates and is compiling the updated Water Safety Plan for issue shortly.

During the past twelve months the Trust has made considerable improvements in delivering its water hygiene programme, essentially operating robust schemes across a number of key compliance requirements. However, there remain a series of challenges, which if not resolved with urgency have the potential to degrade the good work completed over the past twelve months. The key areas for consideration are:-

Data handling, record keeping and the interface between PPM and the ACOP L8 logbook system requires further improvement and a common approach across all sites. The MiC4C system needs to be expanded and greater resource provided to turn it into a valuable Estates management tool. Whilst heavily used at Pilgrim Hospital Boston there is a reluctance to embrace at Lincoln County Hospital. Pilgrim Hospital Boston has developed a simple model derived from a system of control implemented by Water Solutions within other Trust that has withstood serious compliance audit by external bodies. This uses a combination of S drive and MiC4C and a simple structure so that information can be readily retrieved. The Water Safety Group proposal is to utilise this same model across the remaining sites within the Trust, and request the Pilgrim Estates Team to assist in the roll out.

Across the Trust there are ACOP L8 Risk Assessments in place for each site; those of Pilgrim Hospital Boston and Lincoln County Hospital require re-writing to provide the depth of scope demanded by the new L8 and HSG 274(parts 2 & 3). A programme of work to update has commenced and should be completed 2016 providing a greater depth of information at both Pilgrim Hospital Boston and Lincoln County Hospital. Grantham District Hospital Risk Assessment completed during 2014/2015, however, with the changes taking place on-site with the water infra-structure a refresh of the Risk Assessments will need to be completed. Lincoln County Risk Assessment has required more work and involvement, by the Risk Assessor (Airtech) which has now been completed. Pilgrim Hospital Boston risk assessment is now completed. All risk assessments will require further review and updating in line with new guidance. Accurate and up-to-date drawings remain an issue for all sites, but especially for Pilgrim Hospital Boston, although this needs to be addressed by the Water Safety Group during 2016-17. Work to develop this programme has commenced and will form part of the estates and facilities directorates governance and compliance programmes directed by the Water Safety Group.

A structured training programme to promote the greater understanding of water hygiene is an essential element and needs to be addressed at all levels and all disciplines within the Trust. Estates personnel need the necessary training to bring them into line with the new

ACOP L8 (fourth edition 2013) and HSG 274 – Parts 2 and 3. Training has commenced for Estates Staff. Training will be provided by Water Solutions during 2016-17 for all staff but especially for Senior Nursing, Housekeeping and Directorate Managers, this will be provided by Water Solutions at no additional cost to the Trust.

Whilst the basis of a *Pseudomonas* Risk Assessment is in place this needs to be rolled out to each augmented care discipline with the necessary risk factors being noted and acted upon. This is under review by the Water Safety Group with specialist advice from Tim Wafer (Water Authorised Engineer).

Legionella and other pathogens identified which present potential risks to patients and the Trust are reviewed and (POU) filters applied to provide immediate control measures and protect patients. This is reviewed regularly by the Consultant Microbiologist (Water) and the Water Safety Group. POU filters must be viewed as a short term measure and the route cause identified and resolved.

The Trust operates primary and secondary control measures in terms of temperature for hot water and temperature/Chlorine Dioxide for cold mains water (please note that softened water is not treated). It is essential that PPM tasks are completed on time and with the thoroughness required as these will have a direct impact on the water infrastructure.

A key factor within the control of *Legionella* is "identification and management of "little used outlets" and a "robust and effective flushing programme". Where this has been successfully implemented the results have improved considerably. A less time consuming and paper biased regime for recording flushing of outlets needs to be established as a priority. Little used outlets and indeed no use outlets, are a serious threat to the Trust and patients. Legionella can move through the water systems, so to not use it is no protection, it heightens the potential risk, therefore removal of unwanted outlets is essential, flushing is a primary control measure. Lincoln County Hospital completed a scheme to remove unwanted outlets 18 months ago, this needs to be an on-going programme supported by nursing teams as they will see the changes in outlet requirements.

The Water Safety risk assessment from Grantham has been completed by Airtech ECS, we are awaiting a hard copy of the assessment.

We still do not have the water schematics in MiC4C, a survey is required to provide all the relevant information to produce CAD drawings.

Staff training still outstanding – suggest annual awareness training for all staff

Currently the only augmented care area identified for Grantham is the CCU. We need to reassess this in line with the new HTM.

Chlorine dioxide plant – the system appears to be running smoothly at Grantham, but we do need to upgrade the monitor the tower block. It is now obsolete and no longer available.

TVM PPM needs to be rewritten in line with the new HTM etc. We have been successful in employing a new mechanical Craftsperson here in Grantham; this will enable us to complete more statutory PPMs and provided compliance with the HTM and L8 requirements.

Asbestos still remains in the tower block causing access problems to the water services.

Old pipework and all its associated problems still remain, leaking pipes, biofilm deposits etc.

7. Design, construction, renovation and refurbishment programme

The IPT continues to contribute to the design, construction and renovation projects across the

Trust as requested by Estates and the P21 development group.

The initial design, acceptance of specification and on-going discussions will assist in creating greater facility resilience.

A dedicated loop has been planned and will be installed on Stow Ward. Any issues are reported to Water Safety Group regularly with IPC representation at the meeting. – loop installed successfully June/July 2016 with no problems arising

4 x Large Main Water tanks at Lincoln County have been identified for urgent water safety improvements. Funding has been approved on the Trusts Backlog Capital prioritisation programme and agreed by the WSG. – the required works are now complete

Clinic 9 Dental – Refurbishment of procedure rooms to modern ventilation standards including new bespoke cabinetry and clean surfaces. The design and tender/procurement of this work was undertaken in 2015/16 and the scheme is anticipated to be complete by winter 2016. – works completed January 2017

Plans are in place to refurbish 2 side rooms on MEAU to create improved patient accommodation and support the Trust to manage IPC issues. This work is scheduled for completion by Autumn 2016. – works completed September 2016

Neonates Mat Wing 6th Floor – works nearing completion to provide a fully compliant Neonatal Intensive Care Unit, due for completion September 2017. New pipework also installed with water testing due to be completed September 2017

8. Theatre ventilation

The Trust, through its Facilities Management Estates Team is required to undertake validation/ PPM of all operating theatres across the Trust. This is to ensure that all theatres are validated under the HTM 03-01 regulations (where applicable). During 2015-16 the operating theatres across the Trust have been maintained, tested and validated to the relevant standards (Health Technical Memorandum and Design Notes). During the validation several issues were raised i.e. damaged theatre doors, which have been addressed. The programme for the validation of all critical ventilation systems continues to be undertaken throughout the year and all reports are formally shared with the Trust Infection Control Doctor and Lead Nurse for Patient Safety/Infection Control. It has been recommended that the reports are also shared with the Consultant Microbiologist at each hospital site, and to be tabled at the IP Committee.

Theatre access – theatre access is extremely limited, the only time we can get regular access is on a theatre audit day for approx. 4 hours (1 hour per theatre). Given the resources at our disposal this gives us little or no time to maintain the theatres. Only rudimentary checks of the AHUs are carried out and small remedial works undertaken within the theatre complex.

There is a reference to repairs being carried out to theatre doors, these are still ongoing at Grantham. We also need to address the damage to the walls etc. and consider the redecoration of theatres. The 4 theatre ventilation systems have received their annual validation inspection at Grantham. It should be noted that the ducts have not been cleaned in a number of years and consideration should be given to cleaning the supply and extract grilles.

Section 8

Antimicrobial stewardship

A coordinated approach to using antimicrobials in a responsible manner is vital in delivering safe and effective patient care. Antimicrobial Stewardship promotes selection of optimal drug regimens to treat or prevent infections and reduce emergence of resistance. A multifaceted strategy underlines the work plan for the year.

The year 2016/17 has been a year of great progress and challenges at ULHT on the antimicrobial stewardship front. From the development of a locally agreed and a national CQUIN with heavy financial implications, to gaps in the availability of Antimicrobial Pharmacy Team, as well as national and local shortages of several key antibiotics, there have been significant disruptions to work undertaken. The report for this year is based on understanding of events by the Senior Antimicrobial Pharmacist, who officially commenced in post in December 2015.

Antimicrobial Stewardship CQUIN

As mentioned in the 2015/16 report, this locally agreed CQUIN has been the main driving force for improving prescribing standards within ULHT and investing resources to enable antimicrobial stewardship to develop in the Trust.

Recruitment – following departure of the Senior Antimicrobial Technician (1.0 wte) in September 2016 without backfill, there have been significant disruptions to work undertaken by the team. In order to progress on the development of antimicrobial stewardship and achieve the financial incentives associated with this CQUIN, the Consultant Antimicrobial Pharmacist and Senior Antimicrobial Pharmacist embedded the data collection process into weekly ward rounds.

Resources – Following the procurement of a smartphone app, the adult guidelines have been uploaded as the content of the app. A trial project on a group of test users revealed that the app will allow better access to and navigation in the guidance. Additional information, such as doses in renal impairment, have been suggested to be included in the content. The final roll-out of this app has been deferred to 2017/18 due to the staff constraint within the team and ongoing antimicrobial shortages.

Quality Improvement Project – The phased rollout commenced (as agreed) in October 2015,

targeting areas perceived to be high risk in terms of antimicrobial use. Key performance indicators are clearly defined, with a standard of 85% to be met for each. Success of the project is based on demonstrating sustainable good performance or improvement from baseline performance (determined at the start of rollout to each phase). Project methodology was reconsidered and standardised to data collection by the Antimicrobial Pharmacy Team. Following the departure of the Senior Antimicrobial Technician, the Consultant Antimicrobial Pharmacist and Senior Antimicrobial Pharmacist have been running weekly ward rounds across all six phases on Lincoln, Pilgrim and Grantham sites to embed education alongside data collection for this CQUIN. This approach has successfully increased the number of referrals received and interventions performed by the team. Support from Information Systems department has been pivotal in enabling timely dissemination of reports with good visual impact, encouraging healthy competition and ownership on each site. In the second year of this CQUIN, all milestones were met, and secured full financial incentives as agreed.

Table 23 Quality Improvement audit results from Medical Admissions wards at all 3 sites.

Month	Number of pts	% of pts where indication for use clear on Rx	% of pts where antibiotic prescribed according to guidelines / clinically appropriate	% of pts where review/stop date is clearly annotated on Rx	% Documented Review Within 24hrs in Notes	% of pts on >day 3 of Tx with a 'Day 3 Prescribing Decision' clearly documented in the notes
JANUARY	59	88.1%	98.3%	69.5%	100.0%	100.0%
FEBRUARY	60	91.7%	91.7%	63.3%	100.0%	100.0%
MARCH	32	84.4%	90.6%	53.1%	100.0%	100.0%
Jan-Mar 2017	151	**88.7%**	**94.0%**	**63.6%**	**100.0%**	**100.0%**

Table 24 Quality Improvement audit results from Gastroenterology wards at all 3 sites.

Month	Number of pts	% of pts where indication for use clear on Rx	% of pts where antibiotic prescribed according to guidelines / clinically appropriate	% of pts where review/stop date is clearly annotated on Rx	% Documented Review Within 24hrs in Notes	% of pts on >day 3 of Tx with a 'Day 3 Prescribing Decision' clearly documented in the notes
JANUARY	53	**92.5%**	**98.1%**	**79.2%**	**96.2%**	**84.8%**
FEBRUARY	57	**89.5%**	**93.0%**	**75.4%**	**87.7%**	**97.4%**
MARCH	29	**89.7%**	**96.6%**	**82.8%**	**96.6%**	**82.4%**
Jan-Mar 2017	139	**90.6%**	**95.7%**	**78.4%**	**92.8%**	**89.9%**

Table 25 Quality Improvement audit results from Care of Complex Needs at all 3 sites

Month	Number of pts	% of pts where indication for use clear on Rx	% of pts where antibiotic prescribed according to guidelines / clinically appropriate	% of pts where review/stop date is clearly annotated on Rx	% Documented Review Within 24hrs in Notes	% of pts on >day 3 of Tx with a 'Day 3 Prescribing Decision' clearly documented in the notes
JANUARY	89	**86.5%**	**95.5%**	**85.4%**	**93.3%**	**90.4%**
FEBRUARY	74	**95.9%**	**98.6%**	**86.5%**	**91.9%**	**80.4%**
MARCH	48	**93.8%**	**87.5%**	**79.2%**	**91.7%**	**73.1%**
Jan-Mar 2017	211	**91.5%**	**94.8%**	**84.4%**	**92.4%**	**83.1%**

Table 26 Quality Improvement audit results from Respiratory at all 3 sites

Month	Number of pts	% of pts where indication for use clear on Rx	% of pts where antibiotic prescribed according to guidelines / clinically appropriate	% of pts where review/stop date is clearly annotated on Rx	% Documented Review Within 24hrs in Notes	% of pts on >day 3 of Tx with a 'Day 3 Prescribing Decision' clearly documented in the notes
JANUARY	53	**84.9%**	**96.2%**	**81.1%**	**88.7%**	**84.4%**
FEBRUARY	49	**89.8%**	**98.0%**	**67.3%**	**95.9%**	**90.6%**
MARCH	24	**83.3%**	**87.5%**	**79.2%**	**70.8%**	**66.7%**
Jan-Mar 2017	126	**86.5%**	**95.2%**	**75.4%**	**88.1%**	**84.2%**

Table 27 Quality Improvement audit results from Intensive Care Unit/ High Dependency Unit at all 3 sites

Month	Number of pts	% of pts where indication for use clear on Rx	% of pts where antibiotic prescribed according to guidelines / clinically appropriate	% of pts where review/stop date is clearly annotated on Rx	% Documented Review Within 24hrs in Notes	% of pts on >day 3 of Tx with a 'Day 3 Prescribing Decision' clearly documented in the notes
JANUARY	49	**93.9%**	**95.9%**	**69.4%**	**89.8%**	**83.3%**
FEBRUARY	40	**60.0%**	**95.0%**	**72.5%**	**92.5%**	**85.0%**
MARCH	40	**65.0%**	**97.5%**	**60.0%**	**85.0%**	**90.5%**
Jan-Mar 2017	129	**73.6%**	**95.3%**	**67.4%**	**88.4%**	**86.2%**

Table 28 Quality Improvement audit results from Oncology/Haematology wards at Lincoln and Pilgrim

Month	Number of pts	% of pts where indication for use clear on Rx	% of pts where antibiotic prescribed according to guidelines / clinically appropriate	% of pts where review/stop date is clearly annotated on Rx	% Documented Review Within 24hrs in Notes	% of pts on >day 3 of Tx with a 'Day 3 Prescribing Decision' clearly documented in the notes
JANUARY	35	**100.0%**	**100.0%**	**48.6%**	**85.7%**	**94.1%**
FEBRUARY	29	**93.1%**	**93.1%**	**51.7%**	**79.3%**	**94.7%**
MARCH	16	**100.0%**	**100.0%**	**56.3%**	**100.0%**	**100.0%**
Jan-Mar 2017	80	**97.5%**	**97.5%**	**51.3%**	**86.3%**	**95.5%**

Antimicrobial Resistance CQUIN

There are two parts within this national CQUIN. Part A aims at reducing the consumption of all antibiotics, piperacillin/tazobactam, and carbapenem by 1% from baseline consumption in 2013/14. Part B measured the number of antibiotic prescriptions reviewed within 72 hours amongst 50 prescriptions taken from a representative sample across sites and wards.

The antimicrobial consumption increased year on year from 2013/14. The target reduction of 1% from 2013/14 was challenging as the starting points based on 2015/16 consumption were 2.5% for total antibiotics, 11.8% for piperacillin/tazobactam, and 1.5% for carbapenem. The national shortage of IV co-amoxiclav resulted in increased use of IV cefuroxime and metronidazole as the alternative regimen. This has an impact on the total antibiotic consumption...

ULHT demonstrated significant improvement in documentation of 72-hour review with performance of 90.7% at Q4 against target of 90%. The financial incentives were received as agreed.

Interventions to enact both parts of this CQUIN include visiting several high risk wards across sites on a weekly basis and provide education and support alongside. The Blue Man antimicrobial prescribing poster was introduced to all wards across sites to reduce inappropriate antibiotic prescribing.

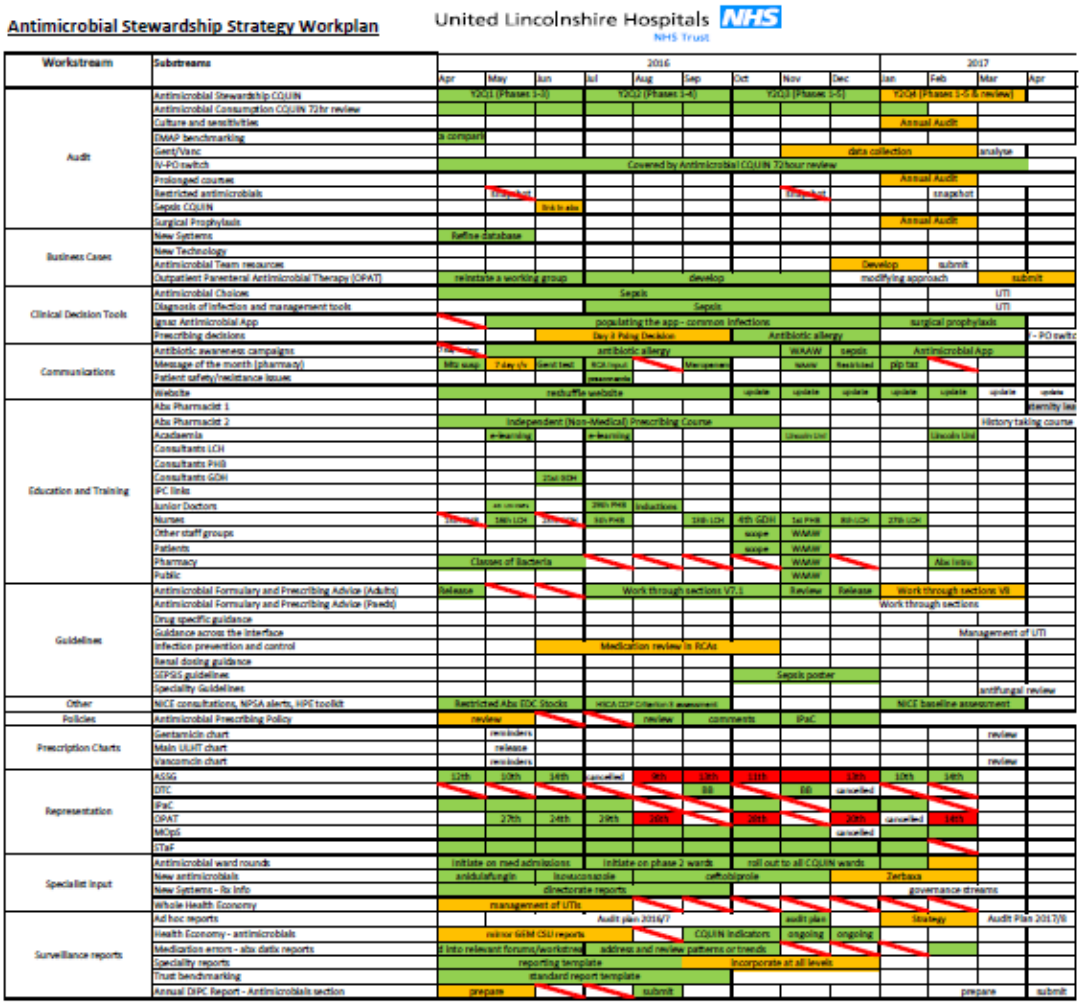
Antimicrobial Strategy

Organisational strategy this year has been shaped by the publication of NICE Guideline NG15 (on Antimicrobial Stewardship) and the Public Health England Patient Safety Alert on Antimicrobial Resistance (NHS/PSA/Re/2015/007).

There has been significant improvement from the baseline compliance of 55% in September 2015 to 82% in February 2017. Gaps in stewardship were addressed within resources available. Actions taken in response to the PHE Patient Safety Alert included embedding understanding of issues around resistance into work going forward.

Over the year collaboration with various stakeholders within and outside the Trust were formed to maximise efficiencies. This includes holding a monthly Antimicrobial Stewardship Strategy meeting with VC across sites, forming an OPAT working group, and regular attendance at Infection Prevention Committee meeting. As a result of these meetings, significant progression has been made on development of the antimicrobial app, guidelines review, scoping for model of OPAT service, and collaboration with primary care colleagues. Improvement in clinical engagement within the Trust is needed and has been included in the strategy for 2017/18.

Table 29 Snapshot of Antimicrobial Progress Indicator, reported monthly. This was developed in January 2016.



Self-assessment of against Criterion 3 of the Infection Prevention and Control Code of Practice, from the revised Health and Social Care Act 2008, was undertaken in February 2016. Whilst it revealed that ULHT is compliant with the key principles as summarised in the self-assessment tool, efforts need to be made to improve Trust assurances around responsible handling of high risk antimicrobials (as highlighted in the detail of this publication). These antimicrobials are mostly reserved for use on microbiology approval only, but there are no provisions in place at present to allow checks on this restriction being applied. A new initiative was proposed to provide such assurances, in the form of authorisation codes issued to confirm Consultant Microbiologist approval had been gained, and allow identification of specific persons to contact if any contra-indications or other concerns. This initiative requires further discussion with the key forums in 2017/18.

Communications

Monthly Antimicrobial Stewardship Trustwide Reports (ASTRs) were developed as a way of summarising the progress on a regular basis, for

disseminations at key forums, with understanding that the content could be shared with other forums within the Trust as felt appropriate. The

- ASSG (Antimicrobial Stewardship Strategy Group)
- IPaC (Infection Prevention and Control)
- MOpS (Medicines Optimisation and Safety)

Introduction of antimicrobial representation at the Whole Health Economy Infection Prevention and Control (WHE IPaC) forum has been welcomed warmly.

Monthly communications to Pharmacy were initiated towards the end of the year, aiming to deliver key messages to the wider team, in order to utilise the skills and resource available in managing antimicrobials.

The antimicrobial webpage on Intranet has been utilised to upload key content such as antimicrobial guidelines, information sheet, monthly reports and e-learning pack.

Education and Training

Content of regular educational sessions for nurses on IV antibiotics was revised. The feedback from delivery of sessions revealed untapped potential to bring non specialist nurses on board with antimicrobial stewardship. The aim of well-structured educational sessions is to make this a truly multi-professional approach. Nursing traditionally has emphasis on Infection Prevention and Control practices, with a need to aim is to inform all relevant parties within United Lincolnshire Hospitals NHS Trust of Antimicrobial Stewardship progress within the organisation.

Likewise, development of educational sessions for medical and pharmacy staff have been reviewed to highlight the principles of infection control in partnership with prudent use of antimicrobials.

A rolling programme of pharmacy educational sessions at each site have been undertaken at ULHT over 2016/17. This is in response to findings of the annual snapshot audit, with benchmarking across East Midlands. Results were comparable across the region, but of particular concern, was that around a third of antimicrobial prescriptions were inappropriate despite being clinically screened by pharmacy. It was understood from the findings that Pharmacy level of knowledge to support antimicrobial stewardship needs to be improved and sustained.

Regular presentation at GDH Grand Rounds provided the opportunity to highlight site-specific issues, such as consumption trends and audit results, to medical staff ranging from junior doctors to Consultants.

Provision of Advice and Guidance

Antimicrobial Formulary & Prescribing Advice (Adults) – Path Links review was finalised and published as version 7.1 in December 2016. New development of guidance over the year includes the management of Varicella-Zoster exposure in pregnant women as part of maternity rash guidelines, metronidazole and vancomycin

information sheet for treatment of Clostridium *difficile*.

Microbiologist ward rounds provision is not standardised across sites, but efforts were made to join rounds where possible. Weekly joint Microbiology and Antimicrobial Pharmacy ward rounds were undertaken in PHB until October 2016 due to shortage in Microbiologists. The Antimicrobial Pharmacy team undertook weekly ward rounds across sites as mentioned in the previous section.

C.difficile Root Cause Analysis (RCA), including presence on the RCA review panel to support this process.

Surveillance

This has changed significantly over 2016/17 following the procurement of the Refine database. This database allowed generation of graphs and scatter graphs which reflected the consumption trend on each site, ward and speciality. The resulting reports helped make benchmarking within the Trust, Health Economy, and East Midlands. It also helped to guide the consumption trend for Part A Antimicrobial Resistance CQUIN which is shared via ASSG, Mops and IPaC. The cost centre mapping has been deferred to 2017/18 due to staff constraints within the team.

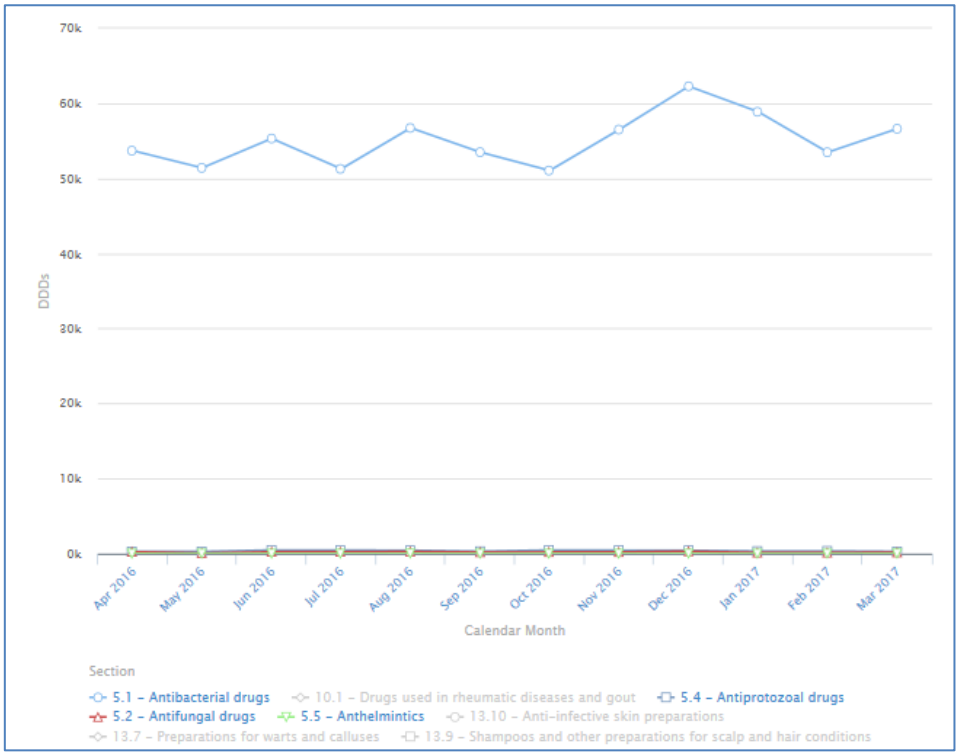
Links with Drug and Therapeutics Committee were recognised for importance in ensuring Antimicrobial Stewardship is considered in development of any guidance or Trust document which makes reference to treatment of infections. Development of communication streams with ASSG was encouraged by all relevant stakeholders.

The Consultant Antimicrobial Pharmacist provided input for medication reviews in

Overviews of antimicrobial use have been taken from the Refine database as below. The level of insight from information gathered is limited this year, but will improve significantly on successful completion of mapping.

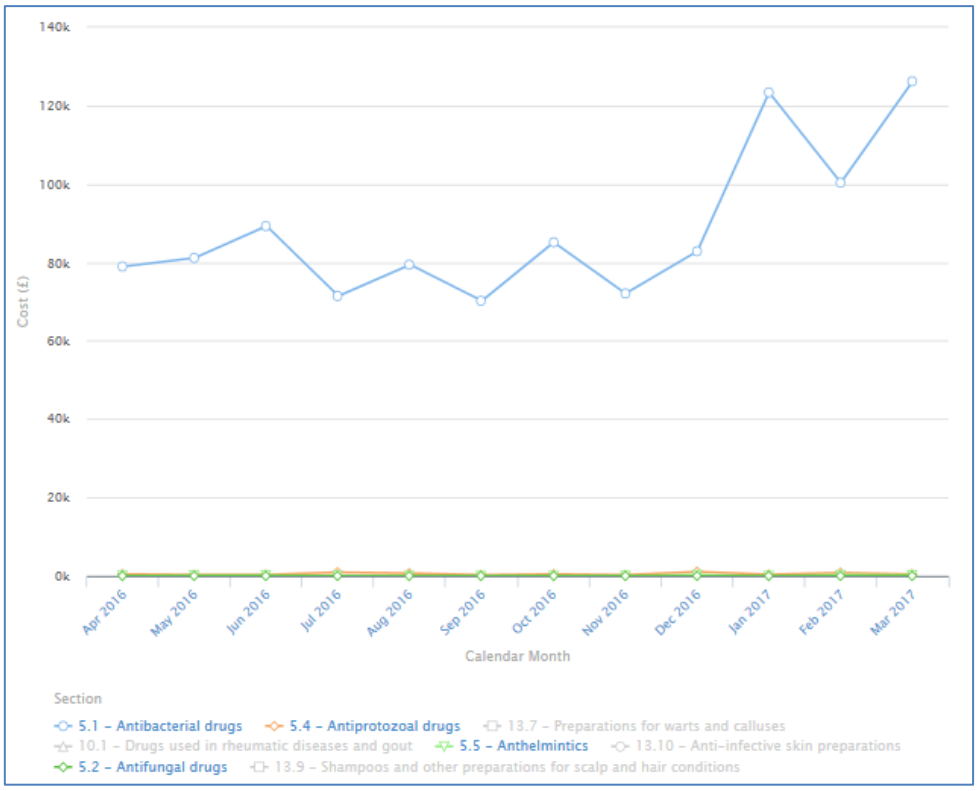
Graph 14 Trends in antimicrobial use at ULHT over 2016/17

Antibacterial consumption accounts for the majority of use, as expected. Increase in consumption at end of financial year could potentially be due to increased Trust activity over this period. Successful mapping of the database will allow relevant conclusions to be drawn in coming years.



Graph 15 Trends in antimicrobial expenditure at ULHT over 2016/17

The cost of antifungal use reduced from previous year due to introduction of generic products e.g. caspofungin and voriconazole.



Section 8

Conclusion

Avoidable healthcare associated infection is deemed as avoidable harm and as such all staff have a responsibility to comply with infection, prevention and control policies and procedures to protect patients. Considerable progress has been made within the Infection Prevention service during 2016-17; the year has presented a number of significant challenges with an outbreak of clostridium difficile on the Lincoln site in Q1 and an influenza outbreak on the Haemotology/Oncology ward in Q4. Despite these challenges the Trust were able to report below threshold figures for cases of Clostridium difficile infection. The number of cases reported were 59 against a threshold of 59 and this will continue to be a major focus for the team in 2017/18.

There are some items that remain outstanding from the Annual Programme of work for 20l6-17 but these will be incorporated into the work plan for 2017/18. These include:

- Reviewing and updating core learning slides
- Reviewing RCA documentation and scrutiny meeting process

Improvements have also been achieved within the Estates directorate in relation to water safety and capital projects. Acknowledgment is made that there is still a great deal more work to do to overcome water safety challenges associated with old buildings. Environmental cleanliness scores have continued to be a challenge in 2016-17, with the Trust unable to achieve the required national standard score. As a result the Trust is unable to declare compliance with Criterion 2 of the Hygiene Code (Health & Social Care Act 2015). Great progress has been made by the Antimicrobial Pharmacy Team and enabled procurement of a smartphone app which will be rolled out in 2017/18 which will allow better access to and navigation to adult guidelines. All milestones have been met for Antimicrobial Stewardship CQUIN by undertaking weekly ward rounds on all sites and secured full financial incentives. ULHT also demonstrated significant improvement in documentation of 72 hour review of antimicrobials for Antimicrobial Resistance CQUIN and financial incentives were also received as agreed.

Furthermore, Improvements were made in flu vaccination uptake rates and were recorded as 70.5% for front line staff, compared to 64% for 2015-16. The Infection Prevention Team will continue to build upon the progress made this year, to ensure that patients who access the services at ULHT are protected from avoidable infection where possible.

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